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WESTERN AMERICANA

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ELIAS BREVOORT,
Santa Fè, New Mexico.

BOST & JENKINS,
San Francisco, Cal.

This copy of Brevoort's New Mexico is presented with the compliments of

NEW MEXICO.

HER NATURAL RESOURES AND ATTRACTIONS,

BEING A

COLLECTION OF FACTS,

MAINLY CONCERNING HER

Geography, Climate, Population, Schools, Mines and
Minerals, Agricultural and Pastoral Capacities,
Prospective Railroads, Public Lands,

AND

SPANISH AND MEXICAN LAND GRANTS.

BY

ELIAS BREVOORT.

Veritatis simplex Oratio est.

SANTA FE:
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1874.

Newspapers of New Mexico.

The New Mexican,*	Santa Fé.
The Regimental Flag,	Santa Fé.
The Cimarron News,	Cimarron.
The Railway. Press and Telegraph,	Elizabethtown.
The Las Vegas Gazette,*	Las Vegas.
The New Mexico Advertiser,*	Las Vegas.
The Republican Review,*	Alburquerque.
The Borderer,	Las Cruces.
The Mesilla News,*	Mesilla.
The Mining Life,	Silver City.
The Tribune,	Silver City.
The Mora Mail,*	Mora.

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* Published in English and Spanish.

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DEDICATION.

TO SOLID MEN,
MEN OF MEANS AND ENTERPRISE, MEN DESIRING THROUGH SAFE
INVESTMENT ALIKE THE WELFARE OF THEMSELVES AND
THE GROWTH AND GLORY OF THE COMMONWEALTH,
MEN OF PERCEPTION AND ACTION,
EVERYWHERE,
THE FOLLOWING PAGES,
INTENDED
TO PRESENT TO THE BONE AND SINEW
OF
THE WORLD OF CAPITALISTS AND OF PRODUCERS,
FARMERS AND LIVE-STOCK MEN,
BY
FAIR AND TRUTHFUL STATEMENT,
THE NOW SCARCELY KNOWN OR APPRECIATED EXCELLENCIES
OF THE
TERRITORY OF NEW MEXICO
AS A FIELD FOR
THE PROFITABLE INVESTMENT OF CAPITAL BEFORE THE COMING DAY
OF
RAILROADS, IMMIGRATION AND EMPIRE,
MAINLY IN
MINING, FARMING AND STOCKRAISING,
AND ESPECIALLY IN
THE EARLY ACQUISITION OF LARGE LANDED ESTATES,
ARE
RESPECTFULLY DEDICATED,
BY

Elias Brevoort.

PREFACE.

The little work we here offer has been prepared in more of a hurry than we could obviate, as our time and business engagements while occupied upon it did not permit that application to it of attention and labor which a due performance of the undertaking really demanded. Nevertheless we send it forth as it is.

The only thing of the kind heretofore attempted was the pamphlet of about one hundred pages, *Interesting Items regarding New Mexico,* gotten up and published last year by Governor Arny, the edition of which, owing to the great demand for it from abroad, was soon exhausted. This fact among others suggested to us the preparation of something of the same kind—though far above and beyond this motive we were actuated by a desire to labor in the task of elevating New Mexico to the high position in the world of wealth and business to which her natural resources and her natural advantages certainly give her a commanding claim.

The population of New Mexico hitherto has not, unfortunately, been of the progressive kind. The Spanish and Mexican race, of whom until recently ten tenths, and at this time nine tenths of the population is composed, has caused the country to progress scarcely a move in the march of material improvement and wealth beyond what it was in the days of the Spanish vice-royalty in Mexico to which it was once subject. Hitherto we have had almost absolutely no institutions of learning, no statesmen, no public spirit, no boards of immigration, no colonies, no railroads.

Each of the several territories of the United States aspiring to the position and rank of a state of the Union through the acquisition of population and the development of its natural resources and capabilities, has presented and urged incessantly its claims to the attention of the outer world through the instrumentality of its local press and innumerable immigration pamphlets. Surely it is time now that the oldest and most populous, and yet the least known because hitherto the least ambitious, of the territories, should enter the lists for the championship of them all. Like the sleeping giant, New Mexico has been reposing in the consciousness of her strength and power, to arouse when the time should come, and to assume among the political divisions and powers of the Union, and in the busy world, the position and rank to which the laws of Nature and of Nature's God entitle her.

But some of the great philosophers declared that no man does aught without a private motive. If this be true, then we, in preparing this our very imperfect little work on New Mexico, must have had ours; and if we had, we think it must have been in this, that being a land grant agent (see our card at the end), and being, as we think we are, thoroughly posted in all matters and things relating to or in anywise concerning Spanish or Mexican private land claims in the Territory—as to their locality, extent, character, capacity and title tenure—and being as we are as a "middle man" ready at all times to give information concerning any of them or to operate in their purchase or sale, we desired to enlarge our business in the ample field New Mexico now affords therefor. And if indeed such a motive we had, we only know that while one of business prompted us to the task, a feeling of pleasure in the work chiefly moved us in its execution.

SANTA FE, May, 1874.

NEW MEXICO.

EXTENT, POPULATION, Etc.

New Mexico has pertained, at different periods and with different boundaries[*] and extent, to three different nationalities—to Spain, to Mexico, and to the United States. Under Spain it was called the province of Nuevo México, under Mexico the province, the territory, the state,[†] and the department of Nuevo Mexico, and under the United States it is called the Territory of New Mexico, destined, we have no doubt, in a very few years to become one of the States of the American Union.

The Territory was created by the act of the United States congress of September 9, 1850, and the territorial government put in operation March 1, 1851, with the eastern and southern boundaries as they now are, and with the northern along the thirty-eighth degree of latitude, and the western along the Rio Colorado of the west, the eastern boundary of the State of California. Afterwards a whole degree of latitude was by congress taken from us on the north, and given to the Territory of Colorado, then a portion of our northwest corner attached to the State of Nevada, and then the whole of the territory of Arizona lopped off from our western half—so that at this time the Territory extends from 103° to 109° longitude west from Greenwich, and from 31° 47′ to 37° north latitude, in other words is bounded on the north by Colorado, on the east by Texas and Indian Territory, on the south by Texas and Mexico, and on the west by Arizona, and extends on an average three hundred and fifty-two miles north and south, and three hundred and thirty-two miles east and west.

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[*] The provincial deputation on January 4, 1823, in dividing the province into civil jurisdictional districts, stated the boundaries of New Mexico as "on the N. the Arkansas river, on the S. New Biscay to the Mimbres mountain, on the W. the Mogollon mountain the Moqui Indian pueblos, thence to the head-waters of the Rio Grande del Norte, on the E. the Senisco hills and pueblo of Jumanes, and thence southwardly over the sandhills."

[†] The Mexican congress on February 4, 1824, erected the "Northern State," created from the provinces of New Mexico, Chihuahua and Durango. We believe the law was soon repealed, mainly on account of a quarrel over the location of the capital, Durango demanding it at the city of Durango, and Chihuahua and New Mexico at the city of Chihuahua.

The general face of the country, says the Commissioner of the General Land Office in his annual report for 1870, is constituted of high level plateaus, traversed by ranges of mountains from occasional isolated peaks rise to a great hight, and intersected by rapid streams of water flowing through beautiful fertile valleys, and channeling in the precipitous rocky cañons. The general course of the mountains, valleys and streams is from north to south, with the tendency to a deflection from northwest to southeast, or towards Mexico and the isthmus of Panamà, the territory including the southern extension of the mountains constituting what is called in more northern latitudes the great Rocky Range, this being an elevated continental vertebral column, extending from the Arctic Ocean to South America without losing its identity, or the chain of connecting peaks being broken, and following a line parallel with the general contour of the Pacific coast throughout its whole extent. *The rivers of New Mexico form parts of the water systems of both the Atlantic and Pacific slopes*—those on the eastern side of the dividing range emptying into the gulf of Mexico by way of the Canadian and Mississippi rivers and the Rio Grande del Norte, and those on the western side flowing into the gulf of California by way of the Rio Gila and Colorado of the West.

The general altitude of the mountain chains, rising on either side of the Rio Grande and Pecos, is between 6000 and 8000 feet, and sometimes, especially in the northern sections of the territory, they reach the hight of 10,000 and 12,000 feet above the sea level. One of the most noted elevations is Mount Taylor, situated northwest of Santa Fé, which rises to a hight of 10,000 feet above the valley of the Rio Grande, this valley having itself an elevation of between 5000 and 6000 feet above the sea in its northern extension towards the Colorado boundary, 4800 feet at Alburquerque, and 3000 feet at El Paso, just across the southern boundary in the Mexican state of Chihuahua.

The climate is considerably varied by the changes of latitude and by the elevation of the surface of the country. The salubrity of the climate is remarkable, and constitutes one of its most attractive features, the malarious maladies occasional in some localities of the Mississippi valley and elsewhere where the soil is imperfectly cultivated and surplus vegetation allowed to decay on the surface, being entirely unknown in New Mexico;

and seldom are persons here affected with pulmonary or hepatic diseases, while the presence of numerous thermal and other mineral springs, possessing extraordinary curative powers, promises to render it, as soon as their virtues shall have become as well known to the great public as now to the explorer and pioneer, one of the most popular places of resort by those residents of the cities and towns whose physical health is impaired, and who seek recuperation, and the beauty of its natural scenery must attract many who desire relief for minds overtaxed with the care and labor of arduous professions or engrossing mercantile pursuits.

The plateaus, valleys and hillsides of New Mexico, continues the commissioner, are usually covered with various indigenous grasses, furnishing the best of pasturage for sheep and cattle, the most valuable and widely distributed of these grasses being a variety called the mesquite or grama grass, which grows during the rainy season of July and August, ripens under the influence of autumnal suns and dries upon the stalk, bearing a copious abundance of nutritious seeds, and constituting adequate support for every kind of live stock throughout the entire winter, and until the more rapidly growing herbage of the spring and early summer has attained sufficient growth to attract animals by its freshness from their winter sustenance, and furnish the change of food necessary to the most perfect development of animal life. The herdsman and shepherd in this country therefore possess great advantages over the farmer and stockraiser of the more eastern states, as the latter is compelled to spend a large portion of his time and labor in summer in providing food for the support of his stock during winter months; besides this advantage there is to be considered the fact that mildness of the winters and the slight falls of snow render shelter, other than that afforded by the valleys, and timber, entirely unnecessary for the protection of the herds and flocks, the pure air, wide ranges, and excellent food resulting in an extraordinary healthiness of the animals, among which the contagious diseases, prevalent in other sections, are almost entirely unknown, the horses being remarkable for their endurance, and the beef and mutton celebrated for their excellence, while the flesh of the cattle and sheep is readily cured without the use of salt, by being hung up in the open air, the variety of the atmosphere soon producing a state of dryness, which will preserve it in all its natural sweetness and excellence for any reasonable period. The production of wool is at present one of the most profitable branches of industry in the Territory, and the recent introduction of the improved breeds of sheep, with the view of obtaining larger animals and finer qualities of fleece, will undoubtedly contribute greatly to the advancement of this interest.

The mining interests of the Territory are important, and promise to constitute in the immediate future one of the chief sources of wealth and prosperity; the deposits of gold, silver, copper, iron and coal being extensive and valuable. Embarrassments, proceeding from Indian difficulties, and from the want of ready means of transportation for supplies and products, have greatly retarded the development of the mines in the past; but recently the country has become more settled and safe, in consequence of the present beneficent Indian policy of the government and the efficient administration of the same, the result being new discoveries of valuable mines, and more profitable working of the older ones, the yield of gold and silver during the past year comparing very favorably with that of any of the past years in the history of this interest, notwithstanding the suspension of work on some of the principal mines, for the purpose of introducing new and improved machinery with the view of their more economical working. The great desideratum in connection with the mining interest is better and cheaper modes of transportation, which can only be furnished by the construction of railroads, and when these shall have been extended through the Territory—as they inevitably soon must be, in the course of American progress—the mines of New Mexico will undoubtedly contribute greatly to the augmentation of the present annual product of the precious metals in the United States.

There are certain portions of the Territory perhaps unfit for either cultivation or pasturage—but it is certain that almost all the valleys of the rivers, as well as the table-lands within reach of irrigation, are exceedingly productive, the soil possessing elements of great fertility, and the occasional scarcity of water alone preventing the more arid portions from producing excellent crops and superior indigenous herbage. The most abundant crops of the Territory are those of corn, wheat, barley, oats, apples, peaches, apricots and grapes; all of these grains and fruits thriving readily, and the crops being of excellent quality. The soil, climate and nature of the surface are especially adapted to the culture of the grape, this being an important branch of the husbandry of the country, the yield of fruit being prolific, and the wine produced therefrom of excellent quality. Consequent upon the necessity of irrigation, cultivation of the soil is confined to those localities where water from the rivers and streams can be readily obtained, the usual method of securing the necessary supplies being by constructing large canals, called *acequias madres*, of sufficient capacity for an entire town or settlement,* at the cost of all who desire the benefits to be derived therefrom, along the most elevated portions of the valleys or over the greater elevations of the plateaus adjoining the foothills of the mountains, and from this main ditch each farmer constructs his own minor canal to the lands he desires to irrigate, the right of each to the use of the water being confined to certain hours in each week, in order that the supply may be fairly divided, a farmer being able, by the use of these ditches, to water thoroughly about five acres in a day, on even ground. The necessity for irrigation is certainly the source of considerable trouble and labor to the agriculturist, but the certainty and excellence of the crops, which result from this care, and the comparative freedom from dependence upon the seasons, almost atone for this necessity. But it is gathered from well tried experiments that, *when more attention has been given in this section to the planting of fruit and forest trees, the climate will be materially changed* in this respect, greater supplies of rain following, and its fall being more evenly distributed through the several seasons.

The principal forests of New Mexico are confined to the mountain ranges, being constituted chiefly of pine, cedar, spruce and other varieties of evergreens; but on the foothills extensive tracts of piñon, cedar and mesquite are found, and in the river bottoms, fringing the margins of the streams, are belts of cottonwood, sycamore and other deciduous trees, while in the southern parts of the Territory groves of oak and walnut are abundant.

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* The *acequias* are often twenty or thirty miles long, and often afford considerable mill power. Each irrigation is a new coating of manure to the soil, and cultivation by irrigation, instead of impoverishing, enriches the soil. The Spaniard two hundred and seventy years ago found the Pueblo Indians here cultivating the ground by irrigation, and the same land has been so tilled ever since annually, and it is still of undiminished fertility and productiveness.

We have made and we subjoin an estimate of the present population of the Territory by counties, pueblos and country settlements. We fear our estimate of 121,250—which it happens is just *one inhabitant to the square mile*—is too small in reality, and would not object to the readers adding, say five per centum to it.

The census of 1870 shows a population of 91,871, and that of 1860 showed a population of 93,516—wherefore there appears *prima facie* to have been during the decade *a decrease* of 1645; whereas the truth is, there was *an increase* of more than 21,000, or about thirty per cent. An explanation of the case is important in the premises, especially as the want of it—owing in a great degree to the silence and, in this matter, docility of the local press—has for a long time unquestionably been giving the Territory a false and an injurious reputation among those ignorant of the facts. Indeed, we remember no instance of a reference to the subject by any of our journals, except in a recent article in the *Daily New Mexican* of Santa Fé, and from which article we here reproduce a portion:—

"The other error is in regard to population. It is true that the census of 1870 shows *an apparent loss of population* during the preceding decade, *but it is not really so.* The population of New Mexico in 1860 was 93,516, but this *included* Arizona, with a population of 9,581, and a tier of counties, now in Colorado, containing 13,318, which were all set off from us during the decade, or a total of 22,899. By the census of 1870 we had 91,871, showing that we really increased 21,254, or about 30 per cent. upon the population of the present territory of New Mexico, which was 70,617 in 1860, and *not* 93,516, as people generally suppose, and the mistake is but natural, for *the census contains no note of explanation.* We claim that, considering the embarrassments under which our territory has labored, remote from commercial centers, far from railroads and with totally inadequate means of communication and travel, with the false reputation of being largely inhabited and overrun by savages, our rate of increase was highly creditable. The average rate of increase of some twenty or more of the old states was but 20 per cent. between 1860 and 1870. The actual *rate of increase of*

New Mexico property was greater in that time than that of Alabama, Arkansas, Connecticut, Delaware, Georgia, Indiana, Kentucky, Louisiana, Maine, Massachussetts, Missouri, Mississippi, New Hampshire, New York, North Carolina, South Carolina, Ohio, Pennsylvania, Rhode Island, Tennessee and some other states. The increase since 1870 has been much greater than during any other equal lenght of time, and we think fully thirty per cent. already. Including our Pueblo Indians—who are peaceful, industrious and honest people, living upon farms that they have occupied from time immemorial—we claim at least 130,000 people. Our flocks and herds, our mineral development and other substantial wealth has increased as fast in proportion as our population, if not faster, and we are abundantly able* to provide for an economical state government, such as our people will expect and demand."

The facts and statistics, presented by the editor, are well founded and correct; and from them appear what was really the population of THE PRESENT TERRITORY at the census of 1860, what it was in fact at that of 1870, and what was the actual increase instead of the apparent decrease during the decade intervening between the two censuses, as follows:—

Census of 1860		93,516
Deduct Population given Colorado in 1861	13,318	
Deduct population given Arizona in 1863	9,581	22,899
Real census of 1860		70,617
Census of 1870,		91,871
Real census of 1860		70,617
Increase in the decade		21,254

We very much doubt that the last census—taken four years ago—was a complete exhibit of our population. It seems to us that we had more people than that enumeration shows—that we must have had then 100,000 at least. But if it was complete, and if our estimate of the present population be correct, then during the last four years the Territory has augmented its population at least 29,379. We cannot believe we have estimated too small, in the following statement, the number of souls in the respective counties, towns, Indian pueblos and country settlements of the Territory.

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* A main question just now (May, '74) in New Mexico politics is *State or No State;* and it has divided the politicians into Territory men and State men. Our delegate in congress—who is a state(s) man—has introduced a bill for an enabling act, and the article we have quoted from was written in the "State" interest. We may be "*able*" to support a state government; but we think New Mexico and the New Mexicans are not *ready* and *prepared* just yet for a state autonomy. We want railroads first. These make the state, and not the state them.

POPULATION OF NEW MEXICO.

Names and estimated resident populations of the various cities, towns, villages, Indian Pueblos and counties of the Territory.

County Seats in SMALL CAPS, Indian Pueblos in *Italic*, Post-offices with*.

In the *County of Taos:*

*FERNANDO DE TAOS,	3,000
Ranchos de Taos,	2,000
Rio Hondo,	1,500
*Rio Colorado,	1,500
Arroyo Seco,	1,000
Embudo,	500
Taos,	375
Chemisal,	325
Las Trampas,	275
Picuris,	250
*Castilla de New Mexico,†	250
Peñasco,	200
Santa Barbara,	200
Picuris,	150
Country settlements,	1,500
Total,	13,025

† The New Mexico and Colo [illegible] line runs through the town.

In the *County of Colfax:*

*CIMMARRON,	1,800
*Elizabethtown,	600
Clifton,	125
Ute Creek,	65
*Rayado,	700
Country settlements,	1,000
Total,	4,290

In the *County of Mora:*

*MORA,	3,000
*Sapello,..	1,400
Cevolla,	1,200
Cueva	1,000
*La Junta,	1,000
Cherry Valley,	800
*Loma Parda,	750
*Ocate,	75
*Fort Union,	50
Guadalupita,	650
Country settlements,	1,550
Total,	11,475

In the *County of Rio Arriba:*

Cañada,	1,750
*Rito,	1,100
Chama,	1,100
*Ojo Caliente,	1,000
*Tierra Amarilla,	450
*Abiquin,	1,050
Chamita,	900
*PLAZA ALCALDE,	925
Los Luceros,	700
La Joya,	650
*_San Juan_,	350
Cuchilla,	75
Santa Clara,	50
Country settlements,	1,900
Total,	12,000

In the *County of Santa Ana:*

Santo Domingo,	1,000
Jemez,	800
Santa Ana,	500
San Felipe,	400
Cochiti,	400
PEÑA BLANCA,	650
Algodones,	500
*Majada,†	200
Vallecito,	150
Lia,	125
Cubero,	100
Jemez Springs,	20
Country settlements,	350
Total,	5,195

† The town, nowadays frequently called Bajada, the Spanish for descent, is at the western base of a high mesa upon a main thoroughfare which there descends to the valley. It is properly Majada, the Spanish for sheep ranch, a large one at that spot one hundred years ago giving the place its name.

In the *County of Santa Fé:*

*SANTA FE,	6,500
Chimayó,	1,500
Agua Fria,	700
Galisteo,	650
Las Truchas,	650
San Ildefonzo,	570
Tesuque,	400
*Pojoaque,	440
Cienega,	350
Real de Dolores,	150
Tesuque,	125
Nambé,	100
Pueblo Guemado,	100
Pojoaque,	20
Country settlements,	1,000
Total,	13,355

In the *County of San Miguel:*

*LAS VEGAS,	4,500
*Anton Chico,	1,300
Tecolote,	1,200
San Miguel,	750
*San José,	750
*Puerto de Luna,	750
La Cuesta,	700
Pecos,	500
La Junta,	500
Chaperito,	750
Liendre,	500
Pueblo,	400
*Santa Rosa,	150
Agua Negra,	300
Los Valles,	300
Las Colonias,	400
Rincon del Tecolote,	175
Las Torres,	100
Bernal,	100
Guzano,	75
Pecos,	000
Hatch's,	75
*Fort Sumner,	250
Country settlements,	1,700
Total,	16,175

In the *County of Bernalillo:*

*ALBURQUERQUE,	2,500
Los Ranchos,	2,400
*Bernalillo,	1,475
Isleta,	1,200
Manzano,	1,000
Chilili,	700
*Alameda,	700
Tajique,	650
Barelas,	400
Torreon,	350
Pajarito,	300
Atrisco,	250
Sandia,	225
Tijeras,	150
Corrales,	700
San Antonio,	100
Forward,	14,000

County of Bernalillo,—continued:

Forward,	14,000
San Lorenzo,	100
Padillas,	100
San Antoñito,	50
Tejon,	50
Country settlements,	100
Total,	14,400

In the *County of Valencia:*

Zuñi,	1,500
Laguna,	900
*Belen,	750
*Peralta,	700
Cevolleta,	650
Valencia,	600
*Los Lunas,	600
Cubero,	550
Acoma,	500
*TOME,	350
Rio Puerco,	350
Casa Colorada,	325
San Mateo,	300
La Joya,	250
Los Enlames,	250
Las Lentes,	250
Moquino,	150
Carson Mine,	60
Country settlements,	1,000
Total,	10,035

In the *County of Lincoln:*

Ruidoso,	500
*Fort Stanton,	50
PLACITA,	1,500
*Lincoln,	150
Ashland,	500
*Roswell,	200
La Junta,	250
Real de Icarilla,	100
Country settlements,	1,200
Total,	4,450

In the *County of Socorro:*

*SOCORRO,	750
*Limitar,	750
*Parage,	700
*Fort Craig,	50
Polvadera,	600
San Marcial,	1,000
Sabinal,	500
*San Antonio,	250
Alamosa,	200
*Aleman,	20
Don Pedro,	100
Silver Mines,	300
Country settlements,	1,000
Total,	6,220

In the *County of Grant:*

*Pinos Altos,	700
*Fort Cummings,	50
*Mimbres,	200
Rito,	150
Central City,	100
*SILVER CITY,	1,000
Country settlements,	1,000
Total,	3,200

In the *County of Doña Ana:*

*MESILLA,	2,500
*Las Cruces,	1,750
*Doña Ana,	700
*Fort Selden,	50
Mesa,	600
Tularosa,	500
Picacho,	300
Santo Tomas,	150
Amoles,	100
San Augustin Spring,	30
Country settlements,	750
Total,	7,430

RECAPITULATION.

In the County of Taos,	13,025
" " " " Colfax,	4,290
" " " " Mora,	11,475
" " " " Rio Arriba,	12,000
" " " " Santa Ana,	5,195
" " " " Santa Fé,	13,355
" " " " San Miguel,	16,175
" " " " Bernalillo,	14,400
" " " " Valencia,	10,035
" " " " Lincoln,	4,450
" " " " Socorro,	6,220
" " " " Grant,	3,200
" " " " Doña Ana,	7,430
Total in Territory,	121,250

CLIMATE AND HEALTH.

The general elevation of the country extending from the Rio Grande to the Rio Colorado of the West, averaging as it does over five thousand feet above the level of the sea, and rising at several points to over twelve thousand feet, ensures for it that purity of atmosphere and coolness which characterize all elevated regions. Another important feature is also connected with the general southerly slope of the whole country, which, while it serves to interrupt and weaken the force of the cold northern currents, admits the warm winds from the south to precipitate their moisture on the higher slopes in the form of summer rains and winter snows. Hence, we have in these elevated districts a climate favoring the growth of trees, a more equable distribution of rain and precipitation of dew throughout the year, especially adapted to the production of nutritious grasses and the cultivation of grain without resorting to irrigation. These desirable climatic features are especially noticeable along the elevated slopes of San Francisco mountain in Arizona, where magnificent pine forests are agreeably interspersed with beautiful grassy valleys and parks, numerous springs, and a delightfully invigorating atmosphere. In passing south along the natural course of drainage, we encounter at lower elevations, numerous fertile valleys, interrupted by rocky ridges and deep cañons, where the climate is milder, the summer heat more intense, and the severities of winter, such as are experienced within short distances in the higher elevations, are unknown. There is, however, sufficient rain in these lower districts to support a rank vegetation, and the copious water-courses offer every facility needed, in the way of irrigation, to mature late-growing crops. These sheltered valleys and irregular rocky slopes, now resorted to by the murderous Apaches for hiding places, will offer to their future civilized inhabitants comfortable winter quarters, where their flocks and herds can be safely sheltered during the inclement season, and kept in good condition till the higher mountain slopes again invite them to their rich summer pasturage. In these favorable climatic conditions, we can safely determine the future location of the populous district of Arizona and New Mexico, which, very fortunately for railroad enterprise, occupies this central continental position, where extensive virgin forests, rich pastoral and agricultural lands, are nearly connected with vast undeveloped mineral resources to complete those desirable features, that will invite and retain a permanent population.

The mildness and excellence and remarkable salubrity of the climate of New Mexico has become proverbial. The dryness and purity of the atmosphere all over the Territory, and especially in the valleys, has induced many invalids afflicted with pulmonary and other diseases to test its salubrity, with great benefit to them and a prolongation of their lives.

As evidencing the remarkably pure and even temperature of the atmosphere in New Mexico, we introduce here in a condensed form an official report of the United States signal service station at Santa Fé, for the year ending December 31, 1873.

Monthly mean of barometer—	January,............	29.77
" " " "	February,...........	29.73
" " " "	March,..............	29.73
" " " "	April,................	29.72
" " " "	May,................	29.85
" " " "	June,.................	29.88
" " " "	July,.................	29.92

Monthly mean of barometer—	August,	29.97
“ “ “ “	September,	29.91
“ “ “ “	October,	29.90
“ “ “ “	November,	29.83
“ “ “ “	December,	29.78
Yearly “ “ “	1873,	29.83

Monthly mean of thermometer—	January,	27°
“ “ “ “	February,	34°
“ “ “ “	March,	38°
“ “ “ “	April,	45°
“ “ “ “	May,	58°
“ “ “ “	June,	66°
“ “ “ “	July,	67°
“ “ “ “	August,	87°
“ “ “ “	September,	60°
“ “ “ “	October,	49°
“ “ “ “	November,	33°
“ “ “ “	December,	32°
Yearly “ “ “	1873,	†49°

Monthly rainfall in inches—	January,	.34
“ “ “ “	February,	.20
“ “ “ “	March,	.13
“ “ “ “	April,	.14
“ “ “ “	May,	.45
“ “ “ “	June,	2.44
“ “ “ “	July,	2.62
“ “ “ “	August,	2.98
“ “ “ “	September,	.27
“ “ “ “	October,	.25
“ “ “ “	November,	.01
“ “ “ “	December,	.04
Yearly “ “ “	1873,	9.87

The highest observed temperature during the year was 88°; the lowest 5° below zero.

The greatest single rainfall was that of 1.21 inch, occurring on June 4.

The wind traveled fifty thousand two hundred and twenty-five miles, the prevailing direction being north.

It is supposed by many that, owing to the arid climate of New Mexico, and the reported small rainfall, water would be scarce. Such persons should remember that the reports are generally made in reference to the valleys, and that in the mountain ranges there are during the winter generally heavy falls of snow, which supply our streams with an abundance of water by its melting during the spring and summer months; besides this, there are numerous springs all over the country, many of them hot and impregnated with minerals, and many of them cold springs. Thus we, in New Mexico, are blessed with pure air and water, both essential to health, and with the Nile of America for irrigation, we have abundance of water to cultivate the valleys of the Rio Grande and other great streams and their tributaries.

On the subject of disease in New Mexico, we quote as authoritative and conclusive from a published letter of Doctor Lew. Kennon, now of Santa Fé, formerly connected with the United States army stationed here, and who has resided and practiced for more than twenty years, and is the leading physician in the Territory. In the letter referred to, writing of New Mexico, he says:

* * * "It is certain that even when the lungs were irreparably diseased, very much benefit has resulted. Invalids have come here with the system falling into tubercular ruin, and their lives have been astonishingly prolonged by the dry, bracing atmosphere.

"The most amazing results, however, are produced in warding off the approaches of Phthisis, and I am sure there are but few cases which if sent here before the malady is well pronounced, would fail to be arrested. Where hardening has occurred or even considerable cavities been established, relief altogether astonishing takes place.

"The *lowest death rate from tubercular disease in America is in New Mexico.* The censuses of 1860 and 1870 give 25 per cent. in New England, 14 in Minnesota, from 5 to 6 in the different southern states, and 3 per cent. in New Mexico.

"I have never known a case of bronchitis brought here that was not vastly improved or altogether cured, and asthma as well.

"Rheumatism and diseases of the heart, with or without a rheumatic origin, do badly here. Valvular difficulty in that organ is invariably made worse. But the most astonishing effect of this climate is seen in those cases of general debility of all the functions of body and mind—that *used up* condition, the pestilent nuisance of physicians in the great cities. People come here in a sort of debácle, having little hope of living, and often little desire to, and the relief is so quick as to seem miraculous.

"I have no doubt that when means of access to this country are better, and therefore it being better known, it will rival or supersede Florida, Madeira, Nice or Dr. Bennett's much vaunted paradise of Mentone, as a sanitarium. The country is far distant from either ocean; it is utterly free from all *causes of disease.* The atmosphere is almost as dry as that of Egypt. The winters are so mild that there *are not ten days in the whole year* an invalid cannot take exercise in the open air. The summers are so cool that in midsummer one or two blankets are necessary to sleep under. The whole territory has been always astonishingly free from epidemic disease.

"For weak or broken-down children *there is surely nothing like it on the face of the earth.* With them the law of survival of the strongest, here seems not to obtain at all."

Concerning the climate and salubrity of New Mexico, Dr. F. V. Hayden, who as an observer and an authority, is preëminent, says in his published report for 1870:

"In order to understand properly the differences in climate and productions observable in the different parts of this section, it is necessary, not only to take into consideration the latitude, but also the variations in altitude, and proximity to high mountains. Beginning at the San Luis valley in Colorado, with an elevation of 7,000 feet above the level of the sea, we find when we reach Santa Fé in New Mexico, the height is still 8,640 feet, which is higher than some of the valleys further north. Keeping on the same plateau, and moving south, the elevations of the principal points are as follows: Galisteo village, 6,165; Los Cerrillos, 5,804; Cañon Blanco, 6,320, and a little southwest of the cañon near Laguna Blanca, 6,943 feet. Moving southwest from this point towards Alburquerque, we find the elevation at San Antonio is 6,408 feet. But when we descend into the immediate valley of the Rio Grande, as far north as Peña Blanca, it is only 5,288 feet above the sea level, or 1,552 lower than at Santa Fé. At San Felipe it is 5,220; at Alburquerque, 5,026; at Isleta, 4,910; at Socorro, 4,560; at Alamosa, 4,200, and at El Paso about 3,800. Strange as it may appear, when we cross the ridge east of Santa Fé, to the headwaters of the Pecos, we find the altitude of Pecos village but 6,360 feet—about 500 feet lower than at Santa Fé; while at Anton Chico it is only 5,372 feet, corresponding very nearly with that of the Rio Grande valley at Peña Blanca.

I have given these particulars in regard to the elevation of this region to show that, sweeping around the southern terminus of the Rocky Mountain range, is an elevated plateau, or extended mesa, which reaching north along the inside of the basin for some distance, occupies both sides of the river, but southward recedes from it. At Peña Blanca we descend into the Rio Grande Valley proper, which continues along the southern course of the river, with little interruption throughout the rest of the territory. From this point south, fruits and tenderer vegetables and plants are grown with ease, which fail no farther north than Santa Fé.

As the Territory of New Mexico includes within its bounds some portion of the Rocky Mountain range on which snow remains for a great part of the year, and also a semi-tropical region along its southern boundary, there is, of necessity, a wide difference in the extremes of temperature. But with the exception of the cold seasons of the higher lands at the north, it is temperate and regular. The summer days in the lower valleys are sometimes quite warm, but as the dry atmosphere rapidly absorbs the perspiration of the body, it prevents the debilitating effect experienced where the air is heavier and more saturated with moisture. The nights are cool and refreshing. The winters, except in the mountainous portions at the north, are moderate, but the difference between the northern and southern sections during this season is greater than during the summer. The amount of snow that falls is light, and seldom remains on the ground longer than a few hours. The rains principally fall during the months of July, August, and sometimes September, but the annual amount is small, seldom exceeding a few inches. When there are heavy snows in the mountains during the winter, there will be good crops the following summer, the supply of water being more abundant, and the quantity of sediment carried down greater than when the snows are light. During the autumn months the wind is disagreeable in some places, especially near the openings between high ridges, and at the termini of or passes through mountain ranges. There is, perhaps, no healthier section of country to be found in the United States than that embraced in the boundaries of Colorado and New Mexico. In fact, I think I am justified in saying that this area includes the healthiest portion of the Union. Perhaps it is not improper for me to say that I have no personal ends to serve in making this statement, not having one dollar invested in either of these Territories in any way whatever. I make it simply because I believe it to be true. Nor would I wish to be understood as contrasting with other sections of the Rocky Mountain region, only so far as these Territories have the advantage in temperature. It is possible Arizona should be included, but as I have not visited it I cannot speak of it. There is *no better place of resort for those suffering with pulmonary complaints* than here. It is time for the health seekers of our country to learn and appreciate the fact that within our own bounds are to be found all the elements of health that can possibly be obtained by a tour to the eastern continent, or any other part of the world. And that, in addition to the invigorating air, is scenery as wild, grand, and varied as any found amid the Alpine hights of Switzerland. And here too, from Middle Park to Las Vegas, is a succession of mineral and hot springs of almost every character."

The geologist and naturalist connected with the survey across the continent for railroad routes, made in 1868, speaking in his official report of the selected route across New Mexico for the Atlantic and Pacific railroad, says of the country:

"A salubrious climate favorable to health and activity, accessible to the moist southerly currents, while at the same time protected from the severe northern blasts, receiving along the higher elevations precipitation of rain and snow sufficient to favor the growth of natural forests and upland grasses, without forming any obstruction to winter travel.

A pleasant variety of atmospheric temperature, connected with differences of elevation or exposure in closely adjoining districts, which can be selected to suit the requirements of the season, or the particular taste of individuals.

An agricultural capacity that in its proper development can be made ample to supply the prospective wants of this region, and in the production of fruits and garden vegetables, can afford the delicacies that enter into the essential wants of civilized communities.

A pastoral region unequaled in the extent or quality of its grasses, which, in adjoining districts, keeps up aconstant supply of nutritious fodder through the year, requiring only the light labor of herding to secure the remunerative returns of this branch of industry.

A mining region yet undeveloped but sufficiently known to be characterized as second to none on the continent in the extent and variety of its mineral products, only waiting for the facilities of railroad transportation to invite and retain permanent capital and industrious labor.

A location of route which presents the special advantages of a main trunk line in being naturally connected with adjoining rich districts that will thus seek an outlet by branch roads to central commercial points.

All these several conditions combine to present those habitable features which render the construction of a continuous railroad route not only highly desirable, but as a matter of speedy development, essentially necessary.

The experience of our engineer parties has covered, in going and returning, nearly every season of the year, giving us a large amount of exact information on this subject; and we have, besides, the results of the experience of previous explorers, who have traversed the route, or a portion of it, in different years. Altogether, these observations cover such an extended period, that we may say there is very little to learn about the climate of this route, as it may affect railroad construction or travel, or the adaptation of the country to settlement. Although a vast new region, inhabited for the most part solely by Indians and game, we have such a mass of information on this subject, including the records of the military posts, that *we can feel entirely confident of the practical deductions* that may be made from this data.

The route throughout is *singularly favored in the matter of climate.* The people of the eastern half of our continent have scarcely a conception of the physical pleasure of mere existence in the pure air and fine weather of this elevated southern plateau. *For healthfulness, it is conceded to have no superior.* In our engineer parties, numbering with attachés, some 150 young men, and exposed to numerous hardships, there was not, either going or returning, a single case of real sickness, and all came home much heartier and more robust than when they started. This covered also a winter in the mountain regions of Arizona. Our experience, in this respect, agrees with that of Beale, who says: 'During the entire winter (of 1858-9) my men were exposed night and day to the open atmosphere—some not using for the whole journey their tents, and others but very rarely, yet not one of them had occasion to complain of the slightest sickness during the journey.'"

The observations taken by Dr. Parry, and the records which he obtained from the various government posts, show a remarkable uniformity of temperature throughout most of the route.

"For *railroad purposes, the climate is unexceptionable.* I am satisfied that on no portion of the line will there be any greater liability to interruption of trains from snow or other winter obstacles, than there is, for instance, on the Pennsylvania Central Railroad.

Personally, I passed over the entire mountain country west of the Rio Grande—including the Sierre Madre, two crossings of the San Francisco mountains (highest summit on the line,) and the Sierra Nevada—in the winter season, from the middle of October, 1867, to the middle of February, 1868, without encountering but one snow storm, or seeing any snow lying on the ground, except on one point. This was a fall of two inches, at Fort Wingate, New Mexico, which had disappeared from the summit of the Sierra Madre by noon of the following day. During this period the days were uniformly mild and pleasant, and, although the nights were sometimes cold, I rarely used a tent on the journey.

Our wagon trains made this long winter march through the mountains without difficulty, the mules and the herd of beef cattle, which was driven along from the Rio Grande nearly to the Colorado, finding an abundance of grama and bunch grass even on the highest summits.

Our party, on the return survey, encountered several storms of snow in Arizona and Western New Mexico, but it melted rapidly, and did not prevent the animals from thriving on the constant good grass.

But little snow falls *east of the Sierre Madre.* On the summit of that range, at Navajo Pass (7,177 feet,) there was no snow early in November, 1867, when our parties crossed it. There had been, on October 31, a fall of two inches, which disappeared the next day. Whipple met none there late in November, 1853. Chavez met a very little in crossing this range December 21, 1863, but it was thawing December 25. Our return party, under Mr. Holbrook, encountered a severe snow storm on the 5th of May, at Agua Fria, in this range, but it only lasted two hours, and melted almost immediately. Navajo Pass is a broad, smooth plateau, from three to ten miles wide, which would not give trouble, even if considerable snow should fall, which is not the case. There may be very rarely a fall as deep as eighteen inches, but it melts rapidly. At Fort Wingate, the yearly mean temperature, from 1863 to 1866, inclusive, was 52°.

At the city of Santa Fé, twenty miles north of the railway survey line, the heaviest snowfalls they have do not exceed fifteen inches, and these are very rare, and in all cases the snow disappears rapidly, sleighing never lasting more than two or three days at a time. In the valley of the Rio Grande, at Albuquerque, snow very seldom falls; and at Mesilla winter is scarcely known, figs being cultivated with great success.

MOUNTAINS, STREAMS, Etc.

The one hundred and twenty-one thousand two hundred square miles, or nearly seventy-seven and a half millions of acres of land in New Mexico, are drained by innumerable rivers and creeks, some of the principal of which are the Rio Grande del Norte, flowing centrally from north to south through the Territory, the San Juan, the Chama, the Canadian, the Cañada or Santa Cruz, the Picuris, the Pojoaque, the Tesuque, the Santa Fé, the Galisteo, the San Cristoval, the Colorado, the Arroyo Hondo, the Taos, the Lucero, the Pueblo, the Pinos, the Ojo Caliente, the Jemez, the San Jose, the Puerco, the Gallo, the Alamoso, the Gila, the Mimbres, the Pecos, the Bonito, the Hondo, the Ruidoso, the Gallinas, the Concho, the Mora, the Cimarron, the Vermejo, the Sapello, the Peñasco, the Chamizal, the Tecolote, the Agua Azul, the Ocate, the Nutrias, the Navajo, the Rito Blanco, the Piedras, the Florido, the Animas, the Plata, the Colorado Chiquito, the Zuñi, the Seven Rivers, the Peñasco, the Agua Negra, and numbers of smaller mountain streams of more or less volume.

From the Rio Grande to the Colorado of the West the whole country presents the character of a vast upland, crossed by a succession of mountain ridges, and basin shaped valleys, interrupted by the product of recent volcanic eruptions in the form of extinct craters, cones, and streams of lava, which have overflowed and buried up the lower sedimentary rocks. The principal mountain axes exhibit a granite nucleus, which, at certain points, is exposed to view in irregular mountain ranges, trending northwest and southeast, and constituting the general frame-work of the country, as exhibited in the Sierra Madre, the Mogoyon Range and the Pinaleño Mountains of Central Arizona. Intermediate to these is the great table-land or *mesa* formation of Western New Mexico and Eastern Arizona, comprising the sedimentary strata of triassic and cretaceous rocks, which spread out into broad uplands, abruptly terminated by steep mural declivities, bounding valleys of erosion, or presenting isolated buttes and fantastically castellated rocks, that serve to give a peculiar aspect to the scenery. The principal foci of extinct volcanic action are represented by the elevated cones of San Mateo and San Francisco, attaining an elevation of over 12,000 feet above the sea, whose alpine slopes, reaching above the timber line, present in their covering of snow the only wintry feature pertaining to this latitude.

It is in the eastern section of this district, New Mexico, that we meet with the most populous and flourishing of the interesting tribes known as Pueblo Indians; here they secure not only defensive positions for their towns on the tabled summits of isolated hills, but also fertile valleys adjoining, suited to their rude agriculture, and a wild scope of grazing country, limited only by the necessity of protection from the thievish and roving Navajo and Apache.

What is known as the Navajo country, extending still further to the west and north, comprises a similar character of broken country, with fertile valleys, grassy slopes, and deeply sheltered cañons, especially adapted to their mode of life as nomadic and at the same time partially agricultural; still better suited, however, to the wants of an energetic civilized community, who can properly appreciate the advantages of a healthful climate, combined with a useful variety of soil, and that picturesque beauty of scenery which adds such a charm to rural life.

The district of the Rio Grande, so termed for convenience in describing the country, although chiefly confined within the bounds of New Mexico, penetrates into the southern portion of Colorado. Beginning at Punche Pass, about 38° 30′ north latitude, it extends southward to the southern boundary of the Territory, and is about five hundred miles long. As far south as Santa Fé its width is tolerably uniform, averaging very near one hundred miles, but here it begins to expand rapidly on the eastern side, to embrace the area drained by the Pecos, terminating in this direction in the *Llano Estacado* or "Staked Plain." Excluding the Staked Plain from our calculation, the entire area of this district amounts to about seventy thousand square miles, about five thousand five hundred of which belong to Colorado, according to the old boundary line.

The district may conveniently be divided into three sections, corresponding with the natural aspect of the country: First, the San Luis Valley (sometimes called the San Luis Park,) which constitutes that portion of the district which lies north of the point where the Rio de Taos enters into the Rio Grande; second, the central portion of the Territory, including the Rio Grande Valley proper and the tributary valleys leading into it between the southern rim of the San Luis Valley and the southern boundary of the Territory; third, the Pecos Valley, which, beginning east of the mountains, about opposite Santa Fé, runs a little east of south to the Texas line, and includes only the area drained by the Pecos River.

This district embraces nearly two-thirds of New Mexico, leaving a strip along the western boundary varying from fifty to one hundred miles in width, and drained by the tributaries of the Colorado and Gila rivers, and a triangular area in the north-east corner drained by the Canadian river. It embraces the central, and, with the exception of a few valleys, the most productive portion of the Territory; and, although much of it is occupied by broken ranges of mountains and elevated mesas, yet there is a large portion which can be irrigated by the streams that traverse it, and a still larger ratio which affords rich pasturage for sheep and cattle. Here also can be found every variety of climate, from the cold of the mountain region along its northern rim, to the tropical valleys of its southern border.

The length of the Rio Grande valley from north to south, counting from the mouth of the Rio de Taos to the Mexican line, is about three hundred and fifty miles, with an average width of one hundred and ten miles. It is difficult to estimate, even with approximate accuracy, the amount of arable land in this area, as, with the exception of the comparatively narrow valley proper of the Rio Grande, it lies in small, irregular valleys and detached spots. And, in addition to this difficulty, great diversity of opinion exists in regard to the average width of this valley, varying from two to twenty miles. Yet this difference is not wholly due to error in either party, as the term "valley" is used in different senses, some meaning thereby only the bottoms immediately along the river, while others include the lower terraces which at some points flank the bottoms. Perhaps the best data we have upon which to base an estimate is to be found in the report of Lieutenant Whipple, who, after a careful examination, estimates the cultivable area of a belt thirty miles wide, and one hundred and eighty miles long, east and west—

reaching from Anton Chico to Campbell's Pass—at three hundred and sixty square miles, or one-fifteenth of the whole area. As this belt reaches directly across the entire width of the section under consideration, it may be taken as an average of the whole; for, although it includes the valley of the San José on the west, the east end stretches over the broad Mesa de la Vista almost from Anton Chico to San Antonio. This proportion would give for the section nearly two thousand six hundred square miles of tillable land, which may be increased by the proper husbanding of water.

In order to understand properly the differences in climate and productions observable in the different parts of this section, it is necessary, not only to take into consideration the latitude, but also the variations in altitude, and proximity to high mountains. Beginning at the San Luis Valley in Colorado, with an elevation of 7,000 feet above the level of the sea, we find when we reach Santa Fé, in New Mexico, the height is still 6,840 feet, which is higher than some of the valleys further north. Keeping on the same plateau, and moving south, the elevations of the principal points are as follows: Galisteo, 6,165; Los Cerillos, 5,804; Cañon Blanco, 6,320, and a little southwest of the cañon, near Laguna Blanca, 6,943 feet. Moving southwest from this point toward Alburquerque, we find the elevation at San Antonio is 6,408 feet. But when we descend into the immediate valley of the Rio Grande, as far north as Peña Blanca, it is only 5,288 feet above the sea level, or 1,552 lower than at Santa Fé. At San Felipe it is 5,220; at Alburquerque, 5,026; at Isleta, 4,910; at Socorro, 4,560; at Alamosa, 4,200, and at El Paso about 3,800. Strange as it may appear, when we cross the ridge east of Santa Fé, to the headwaters of the Pecos, we find the altitude at Pecos Village but 6,360 feet—about 500 feet lower than at Santa Fé; while at Anton Chico it is only 5,372 feet, corresponding very nearly with that of the Rio Grande valley at Peña Blanca.

These particulars in regard to the elevation of this region show that, sweeping around the southern terminus of the Rocky Mountain range, is an elevated plateau, or extended mesa, which, reaching north along the inside of the basin for some distance, occupies both sides of the river, but southward recedes from it. At Peña Blanca we descend into the Rio Grande

Valley proper, which continues along the southern course of the river with little interruption throughout the rest of the Territory. From this point south, fruits and the tenderer vegetables and plants are grown with ease, which fail no farther north than Santa Fé.

But the difference in altitude is not the only influence tending to vary the temperature and vegetation between the northern and southern parts of the section, for about opposite the point where this lower level begins, the mountain range on the east terminates, and, as a matter of course, the depression of temperature and the cold of the nights, so far as caused by the proximity of snowy peaks and icy waters, also ceases.

From the region of the Galisteo south the features of the country change; instead of the vast and lofty ranges of the Rocky Mountains, a succession of shorter, narrower, and less lofty mountains, forming a chain which runs directly north and south a short distance east of the river and almost parallel with it; and what is somewhat remarkable, instead of corresponding with the range east of the San Luis Valley, this chain runs almost directly in a line with the bottom of the valley. While the mountains have thus diminished, on the other hand the miniature table lands of the regions farther north are here replaced by vast plateaus which spread over the country, forming its general level, out of which are scooped the valleys and basins.

On the east side of the Rio Grande, between the Taos Valley and Joya, the country is broken and mountainous, mostly covered with a heavy growth of timber, chiefly pine and fir. This area is traversed east and west by a few small streams, which are bordered by narrow strips of cultivable lands. The three principal ones are the Peñasco, Pueblo, and Chamizal; the first being a vigorous creek which traverses a valley varying in width from one to five miles, which is flanked on each side by high bluffs. A good part of it is already under cultivation, and, as the soil is fertile and the valley sheltered, the crops produced are quite heavy. The other two are smaller and less important than the Peñasco.

Between this broken region and the Rio de la Cañada or Santa Cruz, on the south, lying along the Rio Grande, is a moderate breadth of arable land, some of which is very fertile, and produces not only the hardier cereals, as wheat, oats, and barley, but also corn, which grows large and fine. The tillable area here could be considerably enlarged by irrigation from the Rio Grande.

The Rio de Santa Fé, Rio Galisteo, and Tuerto Creek afford strips of arable land, varying in width from one to ten miles; but here also the amount might be increased by proper efforts and more extensive acequias.

The valley of the Rio Puerco is flanked by elevated table lands, and its lower portion is not supplied with living water but a part of the year; but its principal tributary, the San José, runs through a fine, wide valley, in which there is a considerable amount of cultivated land and a number of villages, the breadth available for agricultural purposes being equal to the capacity of the stream.

At Santo Domingo the valley of the Rio Grande is quite narrow, and continues so for about six miles below San Felipe, where it again widens to six or seven miles, the soil being quite sandy. At Bernalillo it is of considerable breadth, but grows narrow in the vicinity of Zandia, again expanding and affording a tolerable broad area at Alameda. From Alameda to a point some distance below Isleta, there is a moderate width of good bottom land. Contracting near Peralta, it widens again in the neighborhood of Tomé with improved soil, the belt continuing with very little interruption to the bend of the Rio Grande, below the mouth of the Puerco, where the bordering hills close in upon it, reducing it to about one mile. At Socorro there is a medium belt, which expands southward, presenting a very fine agricultural section, which is interrupted in the vicinity of of Fra Cristobal mountains. Between San Antonio and Doña Ana are some of the finest portions of the whole valley, opposite which on the east side stretch the sandy wastes of the dreaded Jornada del Muerto. Near Mesilla and Doña Ana are also some fine openings, which are partially cultivated.

The volume of water sent down by this river is sufficient to irrigate an immense area of land. At Tomé, Lieutenant Emory found by measurement the entire volume, including two acequias, to be equal to a width of ninety-three feet and depth of two feet, or the area of a transverse section, one hundred and eighty-six square feet. The rate of fall between Peña Blanca and Isleta is *nearly six feet to the mile.*

As a general thing the soil along the Rio Grande is quite sandy, but when well watered proves to be very fertile; and, although seemingly adapted to the growth of wheat, this cereal does not prove as productive here as farther north. Indian corn grows finely, and when the better varieties are introduced and cultivated, large and remunerative crops may be raised. Here is to be found *one of the finest grape-growing sections in the Union,* its only rivals being the valleys of California. All the usual varieties of fruit can be raised in abundance and with great ease. Melons, pumpkins, frijoles, and in the southern extremity, cotton, can be produced. In the greater part of this valley two crops of cereals can be raised in one season.

The valley of the Pecos river is one of erosion, worn out of the broad plateau of this region, and presenting, north of the Guadalupe mountains, the appearance of one vast *arroyo.* Its tributaries are few, and, with the exception of two or three, of but little importance in an agricultural point of view.

The Gallinas river and its tributaries afford narrow belts of fertile soil, the area being equal to the supply of water. Around Las Vegas a considerable breadth is under cultivation, corn being the chief crop. The Pecos, to its junction with the Gallinas, runs through a very narrow valley, which has been correctly described as "ribbon-like," a few bay-like expansions forming the only exceptions, as at San Miguel. The valley bottom throughout this distance is generally flanked by high bluffs, which sometimes, as in the neighborhood of La Cuesto, reach an altitude of five hundred feet. Lieutenant Whipple, whose line of survey crossed at Anton Chico, estimates the cultivable land in a belt thirty miles wide and reaching directly across this section, from Pajarito creek to Anton Chico, at one-thirtieth of the area embraced. In the neighborhood of Fort Sumner there is a considerable breadth of fertile land which can be irrigated, and which is well adapted to the growth of fruits and grapes. Along the headwaters of the Rio Bonito there are some fertile spots, where not only fine crops of cereals are raised, but where fruits, grapes, and even sweet potatoes grow well.

From the north end of the Guadalupe Mountains to the mouth of the Delaware River the valley of the Pecos is level and very fertile, averaging in width some three or four miles. The tillable area could be extended far beyond the immediate bottoms. For here the plateau, instead of terminating in abrupt bluffs, descends gradually and in a somewhat gentle slope to the river bottom. The supply of water in the river being ample, and the fall rapid in this part of its course, irrigating canals could be carried far up the slope, if not to the top of the plateau. The soil on the upper level possesses all the ingredients necessary to productiveness, except that furnished by water. Supply this and all the table lands of New Mexico will yield rich returns for the labor bestowed upon them.

The valley in which the Mexican town of Don Fernandez de Taos, and the Indian pueblo of Taos, known as the Taos valley, in the northern section of New Mexico, are situated, may be said to be formed by a notch or bend in the mountain range. On the southwest is the Picuris Range, with a strike nearly northeast and southwest. The next range east of this trends about north and south. It is about eighteen miles in extent from east to west, and sixteen from north to south, the narrow valley of the Arroyo Hondo forming its northern extremity. There is also an open area, about eight miles wide, on the west side of the Rio Grande, which may properly be counted as a part of it. The entire area, including the strip west of the river, amounts to about two hundred and fifty square miles, or one hundred and sixty thousand acres, a large part of which may ultimately be brought under cultivation. The deep arroyo or valley at the north end is from one to two miles wide, affording a fertile spot, easily irrigated, where there is a small Mexican settlement and village. The entire valley of Taos seems to have been one broad field of sage, which, on the parts where it has not been disturbed, excludes every other growth, giving a very barren appearance to the landscape.

Besides Taos there are several other villages and settlements, chiefly Mexican, in the southeast part of the valley. The amount of land in cultivation is not more than fifteen thousand acres. Unless the cañon through which the Rio Grande emerges into this valley should present some insurmountable difficulty, the greater part of its area may be irrigated, the northern and western portion from this river, and that part along the mountains from the streams that flow into it.

The soil is quite different from that of the valleys further north, being very finely pulverized and loose; it also is of considerable depth and very fertile. The cause of its fertility will be understood from the following quotation, made from the preliminary report of the United States Geologist on the "Geological Survey of Colorado and New Mexico," 1869, p. 70:

"The valley proper is scooped out of the Santa Fé marls, which must at one time have prevailed extensively, as in the country north of Santa Fé, but the surface has been smoothed off, so that nowhere are the marls conspicuous; still they can be seen all along the base of the mountains bordering the valley, where portions of the recent deposits lie high on the mountain side. No sedimentary rocks of older date are seen, and the Santa Fé marls rest directly on the metamorphic rocks."

The effect of this marl upon the appearance and character of the soil is plainly seen. The consequence is, that that which in its wild state appears as but a barren sage plain, across which the wind sweeps the fine particles of the light soil, piling it in little heaps around the bushes, by the application of water is changed into a fertile field. Sufficient wheat to supply the Territory might be raised in this valley. It is considered the best wheat growing region in New Mexico. The climate appears to be milder here than in the San Luis Valley proper in Colorado, although but narrowly separated from each other, and the differences of latitude and altitude being slight.

The Cimarron and Vermejo rivers afford considerable breadth of arable land, the former presenting a valley some twenty-five or thirty miles long, varying in width from one to six miles, which can be easily irrigated. The latter presents a valley of more uniform width, and bordered, generally, by higher lands. It is about the same length as the former, and where we crossed it about two miles wide, and very rich and fertile, the creek supplying sufficient water to irrigate the whole of it.

The Rayado runs through a valley somewhat similar to that of the Vermejo, the bottoms being very low and easily irrigated, but they are subject to occasional overflows. The creek is sufficient to supply the lower level with water for irrigation, but the second level is rather too high to be reached except by a lengthy canal.

The Ocate winds through a narrow valley of erosion, the high bordering bluffs descending to it in steep curves, beautifully carpeted over with grass. Not a tree or bush is to be seen; all is as smooth as a meadowy lawn. This valley is generally narrow, varying from one-half to a mile or so in width, but it expands as it approaches the river.

The Mora valley is the finest in this section, and, next to the Taos valley, the best wheat growing region in the Territory. The upper or mountain portion of it is some eight or ten miles long, and about three miles wide. After passing out of this through a narrow gorge, the creek enters the more open plains, and is bordered for the greater part of its length by a tolerably broad and very fertile valley. The entire length is, perhaps, some sixty or seventy miles, and the width of the irrigable lands that skirt the creek will probably average four or five miles.

The comparatively low elevation and southeastern exposure of this section, together with the mountain barriers west and north, give to it a more moderate climate than that of the section immediately west. Not only is wheat, which is produced here, remarkably fine, but corn grows large, with full, fine ears. The fruits, if cultivated, would produce crops almost, if not quite, equal to those of the Rio Grande valley. And in the southeast part of the section, along the Canadian river, grapes can be grown without any difficulty. The native grape, without having the aid of irrigation, grows here in rich profusion, the stunted vines often being loaded down with the clusters.

The Canadian river (called indiscriminately the Canadian, the Rio Colorado, and Red river), is the great water artery of that section of New Mexico, lying between the Raton mountain on the north, and the Pecos river section, or Llano Estacado, on the south and southwest, and which contains about 15,000 square miles. Professor Cyrus Thomas estimates the area of arable land in the section of about 1400 square miles, or 900,000 acres; but his estimate, founded upon slender and unreliable data, is probably very much too small. The pastoral extent and capacity of the section is said to be unsurpassed. The Canadian, rising in the Raton mountain, runs southeast for about one hundred and fifty miles, to Fort Bascom, where it turns east, and passes out of the Territory, a little north of the thirty-fifth parallel—its whole length within the limits of New Mexico being about two hundred miles. Most of its tributaries of any importance in an agricultural point of view flow in from the west, of which the following are the principal ones: Vermejo, Little Cimmarron, Ocate, Rayado (a branch of the Ocate,) Mora, Rio Conchas, Pajarito creek, and Tucumcari creek.

As will be seen by a glance at the map of this region, its western part slopes eastward, while the general descent is toward the south. Hence the highest portion of its general surface is found in the northwest angle, where the elevation is probably about five thousand feet above the sea-level, while the southeast corner, which is the lowest, has an elevation of only three thousand feet.

Starting from the crest of the Raton mountains, immediately above the source of the Canadian river, after passing down through a dense forest of magnificent pines and firs, we enter a beautiful little valley, covered over with a thick sward of luxuriant grass. Here a considerable amount is annually cut for hay, and taken to Trinidad. But this valley soon terminates, and the little stream and road enter a rugged cañon, bordered by precipitous bluffs of gray sandstone, which continue to the plains at the base of the mountain. Here a grand panoramic view spreads out toward the south; a broad, valley-like plain slopes southward as far as the vision will reach. Scarcely a tree or shrub is to be seen; all is one smooth, grassy carpet, which, on the distant gentle slopes, looks more like pale, pea-green velvet than anything else to which I can compare it. Rising up from the broad base are two or three huge basaltic tables, lifting their perfectly level surfaces one hundred and fifty feet or more into the air, and all clothed in the same velvety covering, but which fails to destroy the sharp outline of circular rim. The little stream, like a silvery thread, is seen winding its tortuous course along the gently descending plain, joined now and then by a slender rill flowing down from the mountain on the west. It is a magnificent pasture ground for sheep and cattle, where thousands might be grazed securely at a very small expense.

The Rio San Juan, a large and important tributary of the Colorado of the West, although rising in the San Juan mountains of Colorado territory, bends south and traverses the northwest portion of New Mexico, where it receives a number of affluents. These valleys afford an extensive breadth of very rich land, which can be irrigated, and which will produce fine crops of the cereals, vegetables and fruits, usually grown in the Middle States. As this area, said Prof. Hayden, in 1868, appears to be almost, if not entirely, unoccupied, it would present a good point for a colony, and, indeed, colonies are at this time (1874) being established there; and the excellencies of the region are attracting a large permanent mining and agricultural population into that section. We have elsewhere written more fully of the San Juan river and of the section it traverses.

The Gila river in southwestern New Mexico has upon its margins much good agricultural land, a long distance above where it enters Arizona, but the bottom lands about the headwaters of the stream are said to be pebbly, and comparatively inferior. Emigration however is extending westward, and much of it settling down in the Gila country, where, among other inducements, the good mining character of the mountainous region adjoining on the north and south is a principal attraction, several very valuable discoveries of gold, quartz and placers, and of copper ore, having been recently made, though as yet the country has been but to a limited extent penetrated and explored by prospectors.

The Rio Mimbres, in the same section of the Territory as the Rio Gila, runs through a beautiful valley of moderate width and fertile soil, where all the productions of the Central States can be raised, and where even those things which belong to a more southern climate can be grown without difficulty. This river is a smaller stream than the Gila, and the land along its margins is being much more rapidly occupied by settlers under the homestead laws, there being no Spanish or Mexican or other grants (except the Texas Pacific railroad subsidy), anywhere in that section of country..

The Rio Puerco, the first stream of any considerable size west of the Rio Grande (in the central part of the Territory), into which it empties, runs through a deep, narrow channel nearly its whole course, having along its margins wide and fertile bottom lands, which are being settled upon in many places, now that the hostile Navajos, who for centuries had prevented the extension of settlements westward, have been reduced to subjection, and are no longer to be feared. The water is not in all places permanent in it all the year round, but can be made permanent and available by sinking or damming, as has been proven by some of the settlers upon west of Alburquerque, and by which means they obtain all the supply of water needed. In the months of May and June we have seen the Puerco carrying an average volume of muddy water ten feet wide and four feet deep.

The Rio Pecos is an important and a very beautiful stream, heading a short distance east of the city of Santa Fé, and emptying into the Rio Grande in Texas. It is an exceedingly crooked stream its whole length, with a very narrow and deep channel, its width averaging, we think, about a hundred feet, and its depth about eight feet—the water depth perhaps about five feet. The water in the stream in New Mexico is clear and sweet, though after it enters Texas it becomes so brackish or salty as to be utterly unpalatable, owing to the extensive alkaline regions it traverses as it approaches the Rio Grande. Upon its banks in New Mexico there are numerous towns and settlements, and many thousands of acres of excellent land are irrigated with its water, and thousands of herds of sheep and cattle are found grazing upon the extensive pasture grounds in its vicinity.

The Tecolote is a brisk little river, the principal settlement upon it being the town of that name in San Miguel county. The average width of the creek is, we think, about seventy-five feet.

The Gallinas is a beautiful and an important stream, having upon its margins various flourishing towns and settlements, the principal of which is the city of Las Vegas, county seat of San Miguel. It is somewhat larger than the Tecolote, and has upon its banks a greater number of settlements of all kinds.

But we cannot stop to describe even briefly all the principal streams of the Territory. None of them are large rivers, but all are handsome streams and important water-courses in the natural economy of New Mexico. The one first mentioned in our catalogue—called indiscriminately the Rio Grande, the Rio Bravo, the Rio del Norte, and the Rio Grande del Norte, is not only the great river of New Mexico, but it is the Nile of America, having a most striking resemblance to this great African river. It is 1,800 miles in length, and of almost equal volume from the source to the mouth in the Gulf of Mexico. It has two branches, and flows hundreds of miles without receiving a tributary. It is fed almost entirely from the Rocky Mountains. An annual rise occurs about the month of June from the melting of the snows each spring. Like the Nile, it is almost the sole reliance of the farmer. The natives have made to each town and adjoining lands, canals for irrigation. These are often twenty or thirty miles in length, affording also considerable mill power. The waters of the Rio Grande, like the Nile, are exceedingly turbid, carrying a large proportion of sediment—probably at high water one-fifth of the bulk of the water. Each irrigation is consequently a coat of manure to the soil; and cultivation by this process instead of impoverishing the soil enriches it. The natives never use any other manure. In El Paso valley the Spaniards found a tribe of Indians cultivating the soil nearly three hundred years ago, and it has been cultivated continually ever since, yet the soil is of undiminished fertility.

The valleys of all the streams are extremely rich and productive, and the uplands everywhere in the Territory are vastly more so than the unexperienced and unreflecting would expect or believe. Professor Hayden on this subject says: "It is only after a careful examination of a vast number of experiments made in New Mexico, Colorado, Wyoming, Utah, &c., that I am forced to acknowledge what I before did not believe, viz: *that wherever there is soil in these regions, it is rich in the primary elements of fertility.* Major Emery, in his 'Reconnoisance in New Mexico and California,' speaking of the Mora Valley, says: 'The plains were strewed with fragments of brick-dust, colored lava, scoriæ, and slag; the hills to the left capped with white granular quartz. The plains are almost destitute of vegetation; the hills bear a stunted growth of piñon and red cedar.' And although he adds that rain had recently fallen, and the grass in the bottom was good, yet it fails to obliterate the picture of barrenness he had drawn. But that which wore such a desolate appearance in 1846 is now one of the richest wheat-growing valleys in the whole Territory, its only rival being the Taos valley, which was once covered with nothing but sage-bushes, and was likewise counted as barren and worthless."

The Territory has its prairie districts and its timber districts.

In most of the mountain cañons and gorges, timber, large and excellent, principally pine, is found in great quantity. The report of the 35th parallel railroad route through New Mexico refers to the supply of timber to be found along the proposed railway line.

From the most reliable data within reach, we estimate that in New Mexico there are five millions of acres of timber land, including all lands not destitute of trees. In New Mexico the timber region commences twenty to thirty miles west of the Rio Grande, near latitude 32° 30′, and extends to the north boundary of the Territory. In places, to wit: at and above latitude 35° 30′, it approaches nearer to the river, but within the above limits there are extensive prairies or plains, covering probably three-fourths of the entire area. East of the Rio Grande the timber is confined chiefly to the range of mountains commencing at the north boundary of the Territory, and terminating a few miles southeast of Santa Fé, the Sandia mountains southwest of Santa Fé, and the Sierra Blanca and Sacramento mountains in the vicinity of Fort Stanton in the southeastern portion of the Territory.

From the Pueblo of Isleta on the Rio Grande, to the Mexican town of Rito, forty-eight miles west, there is no timber except cedar bushes on the Rio Puerco. The cedar thickets which Whipple found on the Puerco, in 1853, have all been swept away for fuel by the Rio Grande settlements. The construction timber for this section must come by rail from the Sandia mountains east of Alburquerque, an average haul of 45 miles. For fuel, the coal of Sarocino Cañon exists close to the line.

From Rito to the "Remances" (30 miles), an abundance of large pine timber can be obtained from the spurs of the San Mateo, a wagon haul of 12 or 15 miles. Near the Remances it is but 4 miles distant in the Cañons. And from the Remances to Navajo Pass (44 miles), parallel with the Sierra Madre, the splendid forests of that range are only from 4 to 12 miles distant. This timber is pine and spruce, of fine quality and apparently inexhaustable. The whole of this range south, nearly to the route of the 32d parallel, is believed to be covered with a dense growth of large timber. In connection with the supply on the San Mateo spurs, it will furnish all the construction wants of the road as far west as the Little Colorado, and give it a large commercial traffic.

On the "Zuñi Route," Miller's line ran through or closely adjacent to timber, from fort Wingate nearly to Zuñi village, a distance of 65 miles, west of which cedar and pinon continued the supply for fuel purposes to Farewell Ridge, 25 miles further.

On the San Felipe line, Schuyler found pine abundant and large enough for ties, a few miles north and west of "Moquino," and a good growth of pine in the mountains, within 6 to 10 miles of Zia (14 miles from the Rio Grande), on the Jemez River. So that on this route the timber supply begins much nearer the Rio Grande than on the Isleta line. At San Felipe an abundance of timber can be got by floating it down the Jemez or Rio Grande during the high water of early summer.

On or near the proposed line of the road north of San Mateo mountain good pine timber is abundant. West of the Sierra Madre along Navajo Creek, there is enough piñon and cedar for fuel—though it will not be needed for that use, as coal will be used. Railroad construction timber will have to be brought from the slopes and gorges of the Sierra Madre.

Between Fort Union and the Rio Grande, one hundred and forty miles, the route is well timbered, the supply being either directly upon or within easy access of the proposed railroad. It approaches to within fifteen miles of the Rio Grande in Tijeras cañou, and in the Placer and Sandia Mountains it occurs in the greatest abundance, extending south the whole extent of the Organ Mountains. The timber—pine, spruce, oak and cedar—is of fine quality, and would furnish a fine traffic for the railway.

On the Galisteo route for fifty miles there is no timber fit for construction purposes, though there is enough cedar and piñon for fuel if wanted, but pine can be obtained in abundance from Cañon Blanco Pass, and from the Placer and Sandia mountains by hauling ten or fifteen miles—and would maintain the timber supply to the road on that route nearly to the Rio Grande. In the Santa Fé mountains, 25 miles north of the valley of the Galisteo, the timber is of large size and abundant.

If the line should follow the Rio Grande below San Felipe, timber can be obtained by floating it down the Jemez, at the proper season, and by hauling it from the Sandia mountains which bound the Rio Grande on the east, south of the Galisteo.

On the whole, this route opens up a more extensive supply of timber than the Raton mountain line, and has, besides, the very great advantage of admitting, for most of its length, of the use of large streams for the economical transportation of timber to the points at which it may be required.

In the valley of the Rio Grande, south of Alburquerque, the only timber consists of occasional scanty groves of cottonwood. There is timber in the Manzano or Organ Range on the east side of the river, and in the Magdalena mountains, ten miles west of Socorro. The Magdalena range bears thence southwestward, and contains large pine and pinoreal, and some other timber.

The quality of the pine in New Mexico and Arizona is not always very good; but in the dry climate of this elevated plateau it will probably endure as long as the best varieties of wood in the Atlantic Slope, and will answer for bridging and all other purposes. The Douglas spruce of the Sandia mountain, Sierra Madre and Sierra Mogoyon is excellent.

Timber can be floated down the Arkansas and also the Rio Grande with its tributaries, during the summer rise, from the mountain supplies to the points of crossing. The experience of the Union Pacific Railroad on the Laramie and other rivers in the Rocky Mountains upon their line, has demonstrated how readily and cheaply this can be done.

The whole line is well supplied as well as with timber, with building stone, limestone, and so forth. East of the Rio Grande there is in Colorado the wood-colored sandstone of Fort Wallace, the quarry at Fort Lyon of excellent sandstone, and in New Mexico the eruptive rocks of the Raton mountains, good sandstone and limestone thence to the Pecos river, other sandstone not so good in crossing the Cañon Blanco summit, granite and limestone in the Sandia mountain range, and extensive deposits of limestone between it and the Placer mountain. Between the

Rio Grande and the Rio Colorado occur the extensive sandstone beds which line the Rito valley; the superior Jemez marble; the indestructible lava rocks, which are abundant all the way to the Sierra Madre, and will be very useful for many purposes of construction and especially for ballasting; the Rito gypsum, whose prepared material will be useful in bridging, lining of tanks, acequias, &c.; the granite and carboniferous limestone of the Sierra Madre; and the cretaceous sandstones between this range and the Mogoyon, which, although mostly unfitted for the purposes of railroad construction, yet, in the arid climate where they are mainly located, they will furnish an unlimited supply of cheap material, easily worked, and sufficiently durable for storehouses and stations for railways, and innumerable other uses on a large scale.

The forest growth of timber is usually the "Rocky Mountain pine," which, from its durable quality, regularity of growth, and facility for working up into the different qualities of lumber, is probably the most valuable of any western pine. When growing singly this pine is apt to assume a branching shape, with an irregular oval outline; but, in extensive forests, it presents a more uniform trunk, less knotty, and better suited for boards and dimension lumber. The interior wood, being to a considerable extent impregnated with resin, renders it durable and well adapted for railroad ties. This is the prevalent pine tree which is met with on all the elevated mountain slopes extending from the eastern Rocky mountains to the Sierra Nevada.

Along the different lines of the surveyed railroad routes through southern Colorado and New Mexico, a very peculiar pine, very abundant in New Mexico, makes its appearance along the foot-hills of the Rocky Mountains, clothing the low, rocky ledges with patches of dark green, as seen in a distant view. This is the nut pine, or *Piñon* of the natives, *Pinus edulis* of botanists. It is generally of a low, branching habit, its short stocky trunk dividing near the surface of the ground into branching arms, giving it a globular outline. When growing in large bodies its straggling branches intertwine to form almost inextricable thickets. It is generally associated, at lower elevations, with a cedar of a similar straggling habit, which further west gives place to the Arizona Juniper. These trees are all well adapted for fuel, burning when dry with a clear, intense flame, which is prolonged and steady, especially suited for steam purposes. In some sections the piñon presents a more upright growth, and has short, uniform trunks, suitable for railroad ties. The wood is durable but knotty, and with a twisted fibre, so that it is unfitted for other purposes of construction.

The distribution of the piñon and cedar forests are particularly favorable for convenient supplies of railroad fuel, being scattered along the line of the route, easily accessible, and in inexhaustable amount, the range extending through New Mexico, northern Arizona, and to the eastern base of the Sierra Nevadas in California.

The true pine belt of this interior portion of the continent ranges between six thousand and ten thousand feet above the sea; here it secures the needful moisture in the form of rain, dew, or winter snow, and is also naturally associated with the protruded granite rocks which form the central nucleus of the higher ridges. *It would be difficult to conceive of a more convenient distribution of these pine forests for railroad construction or transportation, than that presented on the line of the 35th parallel.* Intercepting first the high pine clad ridges of the Rocky Mountains, it skirts for some distance their eastern base, thus rendering accessible the great bulk of timber products to supply the treeless wastes of the great plains; and by means of the passes leading to the valley of the Rio Grande, furnishes that extensive agricultural district with the material for building, bridging, and railroad construction.

Still further in western New Mexico the high ridges of the Sierra Madre, while offering everything desired in the way of satisfactory railroad passes, presents on the higher adjoining ridges, including the elevated volcanic peaks of San Mateo mountain, a magnificent growth of untouched forests especially adapted to the supply of treeless districts to the east and west.

The principal trees found in the mountain valleys of New Mexico, are the ash, walnut and hackberry, and on the mountains, pine, oak, cedar, pinoreal, and piñon. The principal tree of the deep valleys and stream margins is the cottonwood, a brash tree, which will not make lumber, but is a beautiful shade tree, frequently found transplanted around residences, and which answers most of the requirements for building and fencing.

The willow is common. It is much used by the Jicarilla Apache Indians for making baskets, &c.

The mesquite or screwbean tree becomes, particularly in the Gila river valley, a considerable tree. The wood has a fine grain, and resembles the black walnut. It is very durable wood, and as a fuel makes an intense heat, more so than any with which we are acquainted. These trees emit vast quantities of a gum resembling and possessing similar qualities to the gum arabic of commerce. The Apache Indians eat the mesquite bean, grinding it upon hand mills into flour, and the bread is very palatable. Horses fatten upon the beans. On the table lands is found a peculiar variety of the mesquite. It can hardly be called a tree, being rather a stunted, almost leafless shrub, growing in the most barren places. In summer they are covered with beans. The mesquite tree has the most stupendous roots, though the tree above them often appears but a shrub. A patch of these presented to an observer is always but the visible part of a forest underground. Twelve feet square around one of these bushes will often yield by digging a cord of firewood. They are really the fuel-beds of a district, and nature has furnished in this way thousands of tons of fuel for the smelting of minerals. The roots, both dead and green, make most excellent fire-wood—burn entirely to ashes. The climate being arid, they never rot in the ground. The dead roots are a natural charcoal, and instances have occurred where burning them in a close room has produced death.

The beargrass is common and abundant all over the mesas or table lands of New Mexico, and is very useful. In Mexico, gunnybags, rope, saddlers' and shoemakers' thread, are made from the fiber. During the blockade of the coasts in the late civil war, the manufacture of ropes of this plant was carried on in Texas.

The soapweed, called in New Mexico by its Spanish name, *amole*, is another useful plant, and is very common. The natives prefer it to soap for washing woolen goods. It extracts all grease and restores the lustre of the goods. The lather makes the best shampoo. It is also an antidote for certain poisons.

The maguey plant, known as the American aloe, and called by the Mexicans *mescal*, is common in all portions of the Territory. In lower Mexico, where the plant is cultivated and is quite popular, the Mexicans make from it a beverage they call *pulque*, and in the upper country, including New Mexico and Arizona, they make from it a very intoxicating brandy called *mescal*. The Indians, who cook and eat the heart of the plant, esteem it a great delicacy.

Hops grow wild in the mountains all over the Territory, and are of a superior quality.

Vegetables of all kinds do well, though potatoes, both sweet and Irish, failing in some portions, yield largely in other portions. In the valley in which the city of Santa Fé stands we have often heard it remarked that everything expected to grow and yield in that latitude and elevation does well there, with the sole exception of watermelons and potatoes.

In passing down into the valley of the upper Rio Grande, says Dr. Parry, naturalist to the railroad route survey, we encountered a flora very distinct in its general features, including a number of peculiar plants and strange shrubbery, having a Mexican type. The river here, hemmed in along a great portion of its upper course by dark igneous and basaltic rocks, flows in deep inaccessible cañons, which open out below into wide sandy basins. The San Luis Valley, lying above this cañoned portion of the valley, presents a wide alluvial basin, including extensive tracts of fertile soil lying along the course of the numerous tributary streams flowing down from the high mountain ridges on either side of the main valley. This section is particularly adapted to the growth of cereals and root crops, and in its cool atmosphere, abundance of grass and clear flowing water is eminently a dairy region. In these respects the two portions of the main valley, designated by the Mexican population as the Upper and Lower River, maintain the natural distinction in their products—the former being adapted to small grains, potatoes, butter and cheese, the latter to corn and fruits. In this condition of things an exchange of products would prove of mutual advantage, and afford profitable business in the way of transportation in both directions.

The natural supply of fuel, for all this region, is furnished in the extensive forests of piñon and cedar, which occupy adjoining rocky and barren ridges, while the higher mountain ranges will supply lumber and building material to any desired extent.

The lower portion of the valley of the Rio Grande includes the district of New Mexico. Here we find the valley spread out into wide alluvial or sandy bottoms, bounded by bluffs of gravel and occasional rocky declivities capped with basalt. The flora here includes the plants referred to in Dr. Parry's list as New Mexican. Owing to the more porous nature of the soil, and the greater summer heat, the general aspect of vegetation is characterized as arid. There is a scarcity of tree growth, confined to the cottonwood and willow, which occupy the moist bottoms or direct margins of the river. The grass of the valley is coarse and frequently saline, and on the adjoining uplands it is scant, though of a nutritious quality. The low bottom lands, susceptible of irrigation, are well adapted to the growth of corn, vines and peaches, being subject to irregular overflows, which, when moderate in extent, and occurring at the proper season, help to maintain the natural fertility of the soil, but are occasionally very destructive, in flooding growing crops, or undermining and transporting large tracts of fertile soil, leaving in its place the coarse, sandy layers of the changeable river bed. At other points of the valley the prevalent westerly winds gather up the light drifting sands of the adjoining bluffs, and deposit them in changeable, ripple-marked dunes, on the fertile bottoms, thus consigning them to a hopeless sterility, as well as obstructing the ordinary roads by their deep sandy beds. Still further south, in the neighborhood of Socorro, sub-tropical shrubs, including *Acacia*, *Mesquite* and *Larrea* make their appearance, marking the northern limits of the Mexican flora.

On the uplands west of the Rio Grande, near the 35th parallel, west longitude, we meet with a great variety of surface exposures. These are exhibited in extensive *mesas*, or table-lands, composed of light-colored porous sedimentary rocks, abounding with abrupt mural faces, valleys of erosion; these strata are interrupted at various points by igneous protrusions, and overflows of basalt and lava, serving to diversify in a remarkable manner the external features of scenery, and modify the texture and composition of the overlying soil. This is especially noticeable in the character of the native vegetation, which is directly adapted to these variable conditions. Thus, on the dry uplands and *mesas* we find a scattered growth of grama grass, interrupted with occasional growths of cedar and piñon. On the more elevated mountain ridges we meet with dense forests of Rocky Mountain pine, spruce and fir, intermingled in favorable locations with oak and aspen. The lower valleys, adapted to agriculture, support a growth of coarse grass and shrubbery, interrupted by occasional bare saline flats. In certain sections of this district deep cañoned valleys conceal from view clear running streams in which the vegetation is rank and luxuriant, while at other points the valleys expand into wide, grassy basins, where, during the dry season, running water disappears from the surface, or is exhibited only in brackish springs. This character of country comprises the once favorite home of the roving Navajo and Apache, and, in certain defensive positions, has been occupied since the earliest historic periods by the industrious and contented Pueblo Indians. It extends, with slight variations, through western New Mexico and northern Arizona, the surveyed rail route on the 35th parallel traversing the most desirable portions. Being passed over by the surveying parties during the late fall and winter months, only an imperfect view of its botanical features could be obtained, but the faded vestiges of floral beauty were manifested on every hand to testify to the luxuriant richness of its summer dress.

The list of plants Dr. Parry presented, is a contribution from one of the latest and most complete railroad surveys ever conducted on this continent, to our knowledge, of the natural vegetation of the far West. Without aiming to be complete, it is at least sufficient to show, that along the entire length of the railroad survey, extending from Kansas through south-eastern Colorado, New Mexico and Arizona, to the Pacific, there is an extent of habitable country which only needs to be made easily accessible from the populous districts of the Mississippi valley, and the western seaboard, to support and maintain a prosperous, civilized population.

Thus it will be seen that one of the most noticeable features of the Territory is the amount of timber, which is found at numerous convenient distributing points. Whipple and Beale have dwelt especially on this feature, both pronouncing the proposed thirty-fifth parallel to be the best supplied of any route across the continent. The language of the geologist, Dr. Parry, may most fittingly sum up the case:

"It would be difficult to conceive of a more convenient distribution of these pine forests for railroad construction, or transportation, than that presented on the line of the 35th parallel. Along the entire route, located at convenient distances for transportation, and directly available for the supply of adjoining treeless districts, is an abundant source of this necessary article, not only amply sufficient for all prospective needs of railroad construction, but also furnishing a material for profitable transportation to adjoining mineral and agricultural districts."

AGRICULTURE.

The productions of New Mexico, as might be inferred from the variety of its climate, are varied, but the staples will evidently be cattle, sheep, wool, and wine, for which it seems to be peculiarly adapted. The table-lands and mountain valleys are covered throughout with the nutritious grama and other grasses, which, on account of the dryness of the soil, cure upon the ground, and afford affort an inexhaustible supply of food for flocks and herds both summer and winter. The ease and comparatively small costs with which they can be kept, the rapidity with which they increase, and exemption from epidemic diseases, added to the fact that winter feeding is not required, must make the raising of stock and wool-growing a prominent business of the country.

Wheat and oats grow throughout the Territory, but the former does not yield as heavily in the southern as in the northern part. If any method of watering the higher plateau is ever discovered, we think that it will produce heavier crops of wheat than the valley of the Rio Grande.

Apples will grow from the Taos valley south; but peaches cannot be raised to any advantage north of Bernalillo in the central section, but it is likely they would do well along some of the tributaries and main valley of the Canadian river. They appear to grow well and produce fruit without irrigation in the Zuñi country; and the valley of the Mimbres is also adapted to their culture. Apricots and plums grow wherever apples or peaches can be raised. I neglected to obtain any information in regard to pears, but, judging from the similarity of soil and climate here to that of Utah and California, where this fruit grows to perfection, I suppose that in the central and southern portions it would do well. The grape will probably be the chief, or at least the most profitable product of the soil. The soil and climate appear to be peculiarly adapted to its growth, and the probability is that as a grape-growing and wine-producing section it will be second only to California.

We differ from Professor Hayden in his opinion that Irish potatoes are inferior to those raised further north. Cabbages grow large and fine. Onions from the Raton mountains south have the finest flavor of any we ever tasted, and therefore are not surprised that Lieutenant Emory found the dishes at Bernalillo "all dressed with the everlasting onion." Sweet potatoes have been successfully tried in the vicinity of Fort Sumner, and along the head-waters of the Rio Bonito, and in many other localities. Melons, pumpkins, frijoles, etc., are raised in profusion in the lower valleys; and cotton was formerly grown in limited quantities.

As a general thing, the mountains afford an abundance of pine for the supply of lumber and fuel to those sufficiently near to them. Some of the valleys have a limited amount of cottonwood growing along them. In addition to pine, spruce and cottonwood, the stunted cedar and mesquite, which is found over a large area, may be used for fuel. The east side of the Guadalupe range has an abundant supply of pine of large size. Around the head-waters of the Pecos is some excellent timber. Walnut and oaks are found in a few spots south, but in limited quantities, and of too small a size to be of much value.

The arable land of a large portion of the country is admirably adapted to agriculture and to the culture of the grape. This is especially true of the valleys of the Rio Grande. Those experienced in the cultivation of the vine represent that all the conditions of the soil—humidity and temperature—are united in these regions to produce the grape in the greatest perfection. The soil, composed of the disintegrated matter of the older rocks and volcanic ashes, is light, porous and rich. The frosts in the winter are just sufficiently severe to destroy the insects without injuring the plant, and the rain seldom falls in the season the plant is flowering, or when the fruit is coming into maturity, and liable to rot from exposure to humidity. As a consequence of these conditions of things, the fruit, when ripe, has a thin skin, scarcely any pulp, and is devoid of the musky taste usual with American grapes.

Corn is raised to a great extent, and is a staple agricultural production of the Territory. Barley, wheat and oats do well. Irish potatoes do not grow well anywhere in the immediate valley of the Rio Grande, but very fine crops are produced in the mountains and in the mountain country generally. Beans do well, and are extensively cultivated—they are, indeed, to the native what the potato is to the Irish. The onion, particularly in the valley of the Rio Grande, is also cultivated to a large extent, and in the locality named onions of a pound in weight are a common thing. Chile, or pod pepper, of excellent quality is raised everywhere, and extensively. It is said to excel in quality that raised anywhere in the States, on account of its mild nature, and is extensively used in cookery and as a standard dish.

From the Raton mountain to the Pecos river, near Anton Chico, 160 miles, says General Palmer, the numerous little valleys watered by the tributaries of the Cimarron, Canadian and Pecos, which head in the mountains on the west, make the entire country productive and inhabitable.

Irrigation only is necessary, and this is readily accomplished by proper appliances, as for instance, at Kroenig's, near Fort Union, where the waters of the Mora are led into a large artificial lake, one-eighth of a mile in diameter, and 20 feet deep, which serves to keep under cultivation 2,500 acres, on which are raised excellent crops of all kinds of grain and vegetables (except potatoes.) The valley of the Mora is cultivated for 30 miles above Kroenig's, and 13 miles below. Along the foot of this range (Spanish Range,) is a cordon of small Mexican settlements, which extend from the Raton mountain to the Pecos river, whose inhabitants cultivate the fertile valleys of the Dry Cimarron, the Vermejo, the Poñil, the Cimarron, the Ocaté, the Mora, the Gallinas, Spring Hollow, the Tecolote, the Pecos, and others.

Besides Las Vegas, which has a population of 2,500, there are Anton Chico and 18 other towns in the valley of the Pecos alone, within 20 miles of the crossing point of the Atlantic and Pacific railroad survey, which contain a population ranging from 200 to 1,000 each.

This population, which lives entirely by raising sheep, cattle, horses, mules, and producing corn, wheat, oats, melons and vegetables, is kept in a state of constant alarm and uncertainty by the fears of incursions of the Navajos and Apaches, though the time for these fears, it is hoped and believed, is now passed and gone in New Mexico.

In the valley of the Pecos, near Anton Chico, grapes, peaches, and other fruits are raised, and the valley is cultivable for 90 miles below Fort Sumner, and wherever there is bottom land, for 90 miles above Anton Chico.

The valley of the Rio Grande, for 200 miles north and south of Alburquerque, has an average width of five miles, and appears to be formed of a highly productive loam, frequently covered by a drift of sand, that does not, however, seem to affect its fertility. Everything grows luxuriantly in this soil by irrigation—for which the water of the river is used cheaply and extensively. Wheat yields over 50 bushels, and corn 80 bushels to the acre, and the finest grapes are grown in the greatest abundance all along the valley, whose climate and soil are, without doubt, as specially adapted to the vine culture as the pasturage of the elevated mountain valleys and mesas or tablelands of New Mexico is to the cheap raising of good stock.

Crossing the range at Puntia Pass (called also Punche Pass,) we enter the well watered San Luis Park, 5 to 40 miles in width, which produces all the smaller grains, besides having superior value for pasturage, excelling the best grazing lands of Texas.

South of the San Luis Park are numerous branch valleys, the Taos, the Embudo, Cañada Tesuque, the Chama, Ojo Caliente and others, which join the Rio Grande, and furnish in connection with the valley land immediately along that stream, between its cañons, a considerable sum total of arable district, filled with the small towns and settlements of unenterprising Mexicans and Pueblo Indians, but capable of supporting a large population of Anglo Saxons.

Below the Santa Fé Cañon to Alburquerque, the Rio Grande has a broad, fertile valley, such as has been heretofore described, occupied by cornfields, vineyards and orchards.

West of the upper Rio Grande and the San Luis Park, there is a tempting field, which will be eventually penetrated from this line, the somewhat famous San Juan country and other districts, across to which the Cochetopa, Chama and other passes lead, and which is now receiving a large mining and agricultural population.

Of this section, from the Rio Grande to the Colorado, on the route of the 35th parallel, Dr. Parry, naturalist, says: Sufficent is now known to characterize it as at least self-sustaining in an agricultural point of view, and capable of immense production for export of animal products from the proper development of its pastoral resources. A large section of this country is naturally adapted to fruit, of which the various surface exposures may be suited to different varieties.

Whipple's rough estimate of the area of cultivable soil, woodland and pasture on this division of the route *within* 15 *miles on each side*, was as follows:

Cultivable soil,..............................	953	square miles.
Woodland,....................................	2,193	"
Prairie and pasture,.....................	11,008	"
Total,....................................	14,154	"

There was not as much known then of the country to the right and left of the line, and Gen. Palmer regards his estimate of cultivable soil as entirely too low; and of course a much wider belt than 15 miles would be rendered accessible by the construction of a railroad—perhaps 100 miles on each side.

But let us see what there is:

1st. The table land between the Rio Grande and the Puerco—which is nine miles wide from crest to crest; it is covered with excellent grama grass, but without water. It makes a good sheep country.

2d. Then ensues the north and south valley of the Puerco, three miles in width, whose soil is very rich and only requires irrigating, which can be done, as there is plenty of water in the channel for eight months of the year. Thirty miles above the mouth of El Rito the valley is one mile wide; the surveying parties found it covered with luxuriant grass, and the soil very fertile, a portion of which the Mexicans had under cultivation.

3d. Thence we have the valley of the El Rito, which the line follows for 75 miles to the base of the Sierra Madre. It is from one-half to three miles wide—above Fort Wingate much wider—and there are several fertile intersecting valleys.

It is cultivated for 4 miles below the town of El Rito by the Mexicans, and by the Acoma and Laguna Indians for 10 miles above Laguna, and at the foot of San Mateo mountain, near Cubero, by the Mexicans. The Indians raise 40 bushels of corn to the acre, with very rude cultivation. They also raise large herds of cattle. It might be tilled for its whole length, except in the six mile cañon, if proper measures were taken to economize the water, or to increase the supply by artesian wells.

4th. Both slopes of the Sierra Madre are rich, and tolerably well watered. On the west side, north of El Moro, Beale saw a country of "uncommon beauty," with numerous springs and water courses.

Fifty miles west of the summit, Gen. Palmer's party found the Zuñi Indians cultivating the soil extensively without irrigation, and having large crops of corn and wheat, while every house in the town was filled with dried peaches of excellent quality. Dr. Parry says of this Zuñi valley: It possesses an inexhaustible fertility, which it still maintains, after the lapse of centuries far beyond the historic period. This is at an elevation of 7,000 feet above the sea. We also saw these Indians driving up their flocks and herds, which were very large.

The slopes of this range are far superior, in every way, to those of the Wasatch Range, which the Mormons have strewn for several hundred miles with a population amounting to 100,000, converting that so-called desert into plantations and orchards.

5th. In the valley of Navajo Creek we skirt the southern edge of the "Navajo country," where General Canby's troops in 1862-63 found immense herds of stock, and very numerous fields of corn and peach orchards, the driving off and destruction of which were the only means by which these intelligent and warlike Indians were finally reduced. Colonel Willis, of the California Column, states that he assisted in destroying some of these corn fields as low down as the vicinity of Navajo Springs, and that the corn was as high as his head. Even in the dry country, near Jacob's Well, we saw traces of an ancient irrigating canal.

6th. The valley of the Little Colorado is next reached, and is followed by the line for from 25 to 60 miles, depending on the route adopted. In this distance it is from one to three miles wide, with a rich alluvial soil and plenty of water for irrigation. Grass in the valley excellent. The upper valley of this river, above the cañon, at the mouth of the Zuñi, is said to be very beautiful, 50 miles long, and from 3 to 5 miles wide, and the Sierra Blanca country, in which it heads, is noted for its beauty and fertility, as well as for its attractive deposits of gold, which the Apaches have prevented all explorers from remaining long enough to develop.

The numerous little sheltered cañons leading into this river above and below Sunset Crossing, are especially adapted to fruit culture, also to wheat. There is a vast extent of attractive country in the heavily timbered Mogoyon mountains, south from this part of the surveyed route.

7th. For the next 100 miles, in crossing the Mogoyon Range, we have the finest country met with, perhaps, on our entire route. It is the famous San Francisco Mountain country, magnificently timbered, well watered, and covered winter and summer with the most nutritious grama grass. Its soil, black and rich from the decomposition of the lava that has been ejected in immense quantities from the extinct crater of Mt. Agassiz, will produce, without irrigation, wheat, barley, oats and potatoes in the heaviest crops. The summit and slopes of this range, which lies partly in eastern Arizona, are dotted everywhere with beautiful little grassy parks, openings in the virgin forest of gigantic pines which cover the mountain. On all sides rise tall, volcanic peaks, emulating the central figure, Mount Agassiz, whose crown, far above the timber line, seemed to be just topped with snow, as late as the middle of December.

This is the country of which Beale declares: It is the most beautiful region I ever remember to have seen in any part of the world. A vast forest of gigantic pines, intersected frequently by extensive open glades, sprinkled all over with mountain meadows, and wide savannahs, filled with the richest grasses, was traversed by our party for many successive days.

And Dr. Parry says: We have in these elevated districts a climate favoring a growth of trees, a more equable distribution of rain and precipitation of dew throughout the year, especially adapted to the production of nutritious grasses and the cultvation of grain without resorting to expensive processes of irrigation. These desirable climatic features are especially noticeable along the elevated slopes of the San Francisco mountain, where magnificent pine slopes are agreeably interspersed with beautiful grassy valleys and parks, numerous springs, and a delightfully invigorating atmosphere.

The most attractive place of summer resort on the line of the road is at Mt. Agassiz. It has every attraction; health, scenery, sky, water, elevation, climate, and proximity to the greatest natural curiosity known on this continent—the "Grand Cañon" of the Colorado River, from which it is distant some 40 or 50 miles.

8th. In descending the lower slope of the Mogoyon Range on the west, we enter a drier and more sandy country, pretty well covered with thickets of cedar and piñon, to which the great pine forests give way. The soil, however, is rich, and only requires irrigation, which can be readily secured by damming the numerous cañons with which this district is filled, and thereby preserving the supply of water, of which there is an infinite quantity in the spring (as also during the summer rains).

The grazing is perhaps equally fine on this section, as higher up on the slopes of the Mogoyon mountains, in the beautiful region just described, the similarity of the country being preserved, both in western New Mexico and eastern Arizona.

General Palmer, in speaking of his survey of the 35th parallel railroad route through New Mexico, says: Thus, we pass from the middle state productions of Kansas, to the country of the vine and of semi-tropical fruits; from the bracing summits of the Rocky Mountains, Sierra Nevadas and Mount Agassiz, to where winter is rarely known, in the valley of the Rio Grande, and never in the valley of the Colorado, to cotton and sugar in the latter, and oranges and pomegranates on the western foot-hills of the Sierra Nevada. It may be repeated that the value of the grazing, and of general agriculture, is greatly enhanced by the *mildness of the climate.* The grass is nearly as good in winter as in summer, and the animals of our surveying party were taken through and returned over the most elevated and mountainous part of the route, from October to May, finding everywhere an abundance of the best grazing.

But this remote country has been *carelessly charged with being* *a desert*, and unfit for extensive settlement. It has been said that the western tide of emigration in the United States must stop somewhere in the vicinity of the 100th meridian, and make one leap across to the coast of California. This was natural when the country was so little known. The question of its future capabilities, as deduced from a scientific view of its characteristics, is so ably treated by the geologist of the expedition, Dr. Parry, in his report, that it is scarcely necessary to add anything thereto. It may be pointed out, however, that it so happens that nearly all the tribes of Indians on this route, the Navajos, Zunians, Moquis, Mojaves, and even the Piutes and Apaches, to a greater or less extent, *cultivate the soil.* The Zuni Indians had plenty of corn and dried fruits to sell us as we passed their town.

The country has looked with wonder on what has been done by the Mormons in Salt Lake Basin on the slopes of the Wahsatch Range. But the slopes of the Sierra Madre will, when this line crosses it, build up numerous larger settlements than those of Utah, within five years after the completion of the road; and the parks of Mt. Agassiz, to which the Mormons are already talking of emigrating from Southern Utah, will, independently of any mining interest, attract and support a very large agricultural population. We have, indeed, on this route, a continuous extent of comparatively elevated country, which affords the moisture that makes the country inhabitable and attractive, and gives timber growth, and when the line descends it enters into great valleys with large streams, like the Rio Grande, the Great Colorado, Little Colorado and Tulare valleys.

It should also be remembered, in connection with this question, that on a portion of this route, and accessible thereto, a considerable population already exists—110,000 in New Mexico, probably over 1,000,000 in the northern states of Old Mexico, which will be supplied from this line, 50,000 in Colorado, without mentioning the smaller but energetic Indian-harrassed settlements of Arizona, and the rapidly increasing population of Southern California. The Santa Fé trade is already large, and even on the present basis, a railroad would find considerable business in supplying the wants of this population.

The mere fact that mining can be *carried on at all in New Mexico* and Arizona, under all the discouragements of costly transportation, Indian attacks, and remoteness from the conveniences of life is, to the thinking mind, strong evidence that, with these drawbacks removed, through the agency of a railroad, the development of mining industry would be enlarged in an extraordinary degree. While only the larger and richer veins can now be profitably worked, when the cost of transportation is reduced to one-fifth, and the risk to property and life removed by the settlement of the Indian question, capital will find it advantageous to open up the smaller and less productive veins, and, as these are much more abundant and wide spread than the richer ones, the field of mining industry will thus at once be much more than proportionately enlarged.

Along the whole valley of the Rio Grande, from El Paso northward to the latitude of Santa Fé, is to be found one of the best wine-growing districts in the world. The native wine of New Mexico is a very popular one among those who have tested it. It is exported from the Territory for sale in the states, and will in due time become widely sought after by the wine-drinking world. It is of this wine that the United States Surveyor General for New Mexico in his annual report for 1869 says: "Yearly new vineyards are coming into bearing, counting their vines by the thousands, while the production of wine is annually becoming more and more an article of commerce and profit. Between Bernalillo on the north and El Paso on the south, the traveller may find—and that often in great perfection—both the light white and red wines of the Rhine and Bordeaux, and as he goes south, the heavier Burgundy, port, sherry, and with age, even a good Madeira. With a grape acclimated by two hundred years' cultivation, unexcelled for richness and lusciousness of flavor, always free from blight and disease of every kind, so destructive to European vineyards, so fatal to wine-growing on the Atlantic slope, and often so damaging even to California, with a soil as rich as that of the Nile, with abundance of water for irrigation, and with sunny days and dewless nights, increasing in strength as the summer heats increase, *the wines of the Rio Grande promise to become as varied and as excellent as those of France and Spain.*"

The variable conditions of climate and soil necessarily determine the character of agricultural capacity or adaptation for grazing. A certain degree of elevation in this medium latitude of 35° is necessary to secure atmospheric moisture, favorable to the growth of trees or nutritious grasses. Districts thus elevated are especially adapted to the growth of small grain, while the lower alluvial valleys deriving their main supplies of water from these higher sources, are best suited to the growth of corn, fruits, and other staples requiring a higher temperature and longer growing season. Hence, the mountain districts and higher alluvial slopes present a well marked district adapted to the growth of timber, small grain and summer grazing, while the lower valleys supply farming lands suitable for corn, vineyards and orchards, and offer desirable locations for permanent settlement. Over all this section of country, except the more arid tracts, the uplands are occupied with a peculiar growth of grasses and shrubbery, especially adapted to stock raising. The great variety of these different exposures, according to their elevation or geological structure, occasions a prominent difference in their relative capacity for supporting animal life.

Thus certain desert tracts, on which, during the greater part of the year, no animal could live on account of absence of water, and scarcity of grass, during a short rainy season may be clothed with a verdure capable of sustaining immense herds. Again the lower valleys, which in the winter season afford shelter and pasturage for stock, which can be kept in good condition on the refuse of agricultural fields, become parched and oppressively warm in the summer season, so that the fresh pasturage of the high mountain ridges is preferable. Hence, successful stock raising in this central district will naturally be more or less of a roving character, and be carried on by a class of shepherds and herders adapted to the nomadic mode of life. When thus regulated, agricultural and pastoral pursuits profitably complement each other, and both unite to sustain the largest population, and yield the greatest amount of surplus products of which this section is capable. Sufficient is now known of the central section of country now under special consideration, to characterize it as *at least self-sustaining in an agricultural point of view, and capable of immense production for export of animal products, from the proper develpement of its pastoral resources.* In the valley of the Colorado the semi-tropical character of the climate adapts it to the growth of staple products pertaining to warm countries, including especially cotton, hemp, tobacco, and sub-tropical fruits, while the mild winter seasons admit the successful growth of wheat, which may be harvested before the period of river overflow, to be succeeded the same season by a late maturing corn crop. A large section of this country is naturally adapted to fruit, of which the various surface exposures may be suited to different varieties. The cultivated grape has long been successfully raised in the alluvial bottoms of the Rio Grande, and also seems particularly adapted to sections where volcanic rocks are exposed on the surface, the decomposition of which supplies a large proportion of potash, necessary to perfect the rich, vinous juices adapted to wine making. Peaches are extensively raised by the Pueblo Indians in the sheltered valleys and cañons of the district they inhabit, where, without any special care or resort to irrigation, they produce abundantly and attain a great age. The native fruits, including especially the Cacti, have an agreeably acid flavor, and might by cultivation be so improved as to add an important item to the wholesome diet of this region. They are already much used and esteemed in Sonora, Sinaloa, etc.

STOCK-RAISING IN NEW MEXICO.

For the profitable raising of horses, mules, cattle, goats and sheep, on the most extensive scale, *no portion of the world can rival* this district. Its mild climate presents no rigors, while its mountain slopes, valleys, and plains are unlimited ranges of excellent pasturage. The grasses of the plains and mountain slopes are not the least of nature's wonder. The "grama" and "mezquite" varieties have a peculiar tenacity to life, and survive a succession of dry seasons, and, when aparently dead, a few showers will bring them out in full freshness; indeed, it is said, they change from a single shower. These grasses are sweet and nutritious, dry or green, and cattle thrive upon them and fatten. They cure in the dry season, in the stalks, making a natural hay.

About the year 1540, a small lot of Spanish Merino sheep were introduced into this country from Spain, and from this importation the present sheep, owned mainly by our Mexican citizens and the Pueblo and Navajo Indians, were derived. Owing to the constant "breeding in" without much change in the stock, or attempts at improvement, these sheep have degenerated and decreased in size and quality of wool; yet in various respects the mutton and wool of New Mexico is better than that of the States; this arises from the fact that the climate and grasses are adapted to this class of animals *and it shows the advantage of this country over other portions of our land* for the rearing of this kind of stock. At the commencement of the rebellion, sheep owners were raising their stock not for the wool, but for the meat, which was of better flavor, and more nutritious than the mutton of the States. The wool was allowed to go to waste and be dragged off the sheep's back while passing through the brush. It was thought that the prices of meat would decline at the close of the war, and some of our wise men in New Mexico now say, produce sheep and wool in the ratio you propose, and increase the quality and quantity of the meat, and you will reduce the price so that it will not pay to raise sheep in New Mexico, for this cannot be the case for many years to come. The demand for long wool both in Europe and in this country (for it is evident that in England the supply of combing wools is not sufficient for the demand), will make combing wools an article which will be a source of wealth to the producer for many years yet in the future.

Our shores are swarming, and for years will swarm as never before, with foreign immigrants, hungry for meat, however poverty may have stinted their former supply. All these mouths, and those of millions unborn, are to be supplied in the years of the immediate future. With what shall we feed them? Not with pork, becoming vastly dearer with the increased price of corn; not altogether with beef, while there is such a demand for wool, and just precisely the kind of wool produced by mutton sheep. We must have mutton; and sensible men with money in their pockets will pay prices that must command good mutton, and render its production higly profitable. Conditions now exist favoring adequate remuneration in this branch of husbandry that have never before been brought together in so potent a combination in New Mexico. There is an opportunity to achieve a fame and a success in this direction in a field as yet almost entirely new, that should engage the effort, capital and ambition of the enterprising; and there is little doubt that it will be promptly and successfully occupied by strangers, if our own citizens do not avail themselves of the opportunity.

Those, therefore, who now commence with judgment and energy the production of real superior mutton and combing wools in New Mexico, will reap an abundant harvest of profit, *and the earlier the start, the quicker the reward*, and that it will engage the attention of enterprising people, and meet their just expectations there is no room for doubt.

The peculiar suitability of the country to the raising of the various kinds of stock, will in future years make New Mexico a country whence large supplies of meat for food, and wools for manufacturing clothing, will be derived, and which will be a great source of wealth to our citizens, while it will furnish healthy food for the dwellers in our large cities east of the Territory.

The natural configuration of this vast Rocky Mountain region is not the least of the many desirable advantages it presents. It is situated many thousand feet above tide water, fanned by the purest atmosphere, and supplied with innumerable salubrious streams running from the mountain springs, and furnishing pure water, one of the essential elements for the sustenance of both man and beast. This country having a high and dry range, so conducive to the health of all animals, especially *sheep*, which animal, if properly reared and improved, will prove a greater source of wealth than even our untold and vast mineral deposits. The one we have *in* the earth—the means of producing the other we have *on* the earth. The succession of mountain and valley affords the most ample defence against the heat of summer, as well as the bleak winds of winter; artificial protection indispensable at the north and necessary in many of the states of the Union, which is so apt to induce disease by which whole flocks and herds are sometimes lost, are rendered unnecessary in our more favored country, New Mexico. Our mesas and mountain gorges, and many portions of our valleys, are most prolific in a variety of herbage suitable for all classes of animals, but especially adapted to sheep, and during winter they afford a supply of pasturage so abundant that no additional food is required. The animals can have access to a continuous supply of good food and pure water during the winter, and by a judicious management the only expense of rearing sheep and cattle in this country is the hire of herders, which is comparatively a trifle.

The constant supply of proper food by which the secretory powers are retained in full aetion and uninterrupted increase of meat and fat in animals, and of growth of wool on sheep, is promoted; while cases of constipation, and various diseases frequently fatal in the states by reason of sudden changes of food, are unknown here; there is scarcely a day in the year in which cattle and sheep cannot find here sufficient food of a proper kind to keep their digestive organs in a healthy condition. The soil in our mountain regions is generally good, and it is by no means uncommon to find it fertile and producing grama grass even to the tops of the mountains; and although there are to be found considerable bodies of thin soil, yet even are these more disposed to the production of grass than lands of a better quality in the states. My experience, remarks Governor Arny, for over thirty-five years in Virginia, Pennsylvania, and Illinois, Kansas and New Mexico corroborate, what is well known to all sheep raisers, that, when lands are freely pastured by sheep, their capacity for producing grass is much assisted, as by close grazing the more useless grasses, briars, etc., are subdued, and the desirable descriptions allowed to strengthen their hold; this, together with the tramping of the land and the droppings of the sheep, induces a more prolific growth of good grass.

"In my travels over a large expanse of country within the limits of New Mexico and the eastern borders of Arizona," continues Governor Arny, "I have found growing wild clover, and several varieties of grass which indicate that they can be produced in this country by cultivation. It is only a question of time and the construction of railroads when this country, in addition to its native grasses, which may be greatly increased, will have large meadows and pasture grounds of cultivated grasses, and it has been for nearly forty years a favorite theory of mine, confirmed by my practical observation, that so far as the quality and relative coarseness and fineness of wool is concerned, more depends upon the character of the grass than upon any one other thing, except it may be the constant change of the breeding animals. A stock raiser may determine by a judicious selection of his breed, and the character of the grass he allows them to use for food, the quality and quantity of the wool his flock of sheep will produce, and of course the quality of his wool will regulate the price he will get in the market, and determine the profit arising from the investment of his capital. This is especially so in regard to sheep, but is also to a great extent applicable to horses, cattle, goats and hogs."

Referring to Governor Arny's remark about wild clover, we may mention that this excellent feed for animals is not only found here wild, but when cultivated yields in extraordinary abundance; and alfalfa, or Mexican clover, is raised throughout the Territory, yielding in the southern portion as many as five cuttings a season, and at the altitude of Santa Fé, near 7000 feet, three and four cuttings are produced. Though alfalfa is extensively cultivated and sought after on the Pacific Coast, it is not so here, owing to our extensive and superior pasturages, and is in New Mexico cultivated as yet only in small patches for the use of farm animals.

The report of the Commissioner of the General Land Office, for 1868, says of New Mexico:—

Grass abounds in every portion of this Territory, and even in the forests grows luxuriantly the entire year. At great altitudes this grass is in winter-time covered with snow, though not deadened to the ground, for, as soon as the snow melts, it affords excellent grazing upon the *mesas* (table lands,) and through the valleys grows the justly celebrated grama grass, which is cured as it stands, affording abundant food for flocks and herds throughout the winter. * * * * * *

The facilities and cheapness of raising sheep and goats, applies equally well to the raising of horses and cattle, and, when fully protected from Indian depredations, and convenient transportation is afforded to the markets of the east by the construction of railroads, the hills and mountains will be literally covered with flocks and herds.

No department connected with the breeding of domestic animals in New Mexico has received so little attention as the *production of first class horses.* While we have in the Territory all kinds of horseflesh, and some very hardy and splendid riding animals, derived from California and the wild native ponies of the country, "*broncos*" and "mustangs," we have scarcely any thorough bred or blood horses, and very little is known by our farmers in regard to the improvement of our horses.

The "native stock" of our cattle would be much improved by the introduction for beef or the dairy of the short horn Durhams, Ayrshire, Devons, Herefords, and Jersey or Channel Island cattle. The short horns are generally the greatest favorites for beef from their large size and early maturity, though not making so fine beef as the Devons or Herefords. Those of our people who wish to improve their stock of cattle would do well to procure the several volumes of the American Herd Book, and acquaint themselves with the best animals to improve our native breeds.

A correspondent of the *Santa Fé New Mexican*, writing recently on the subject of sheep and sheep raising, states as follows for the information of numerous persons in Colorado and eastern States, who had been writing out to New Mexico for reliable data on the subject:—

"The best native ewes can be bought for two dollars a head in greenbacks, and delivered to purchaser within 75 or 80 miles from here without additional charge. For a herd of 10,000 sheep, five herders are necessary, two of them should be mounted by the owner of the herd, the others go on foot. The man in charge of herd (mayordomo) gets about $40, the others from $8 to $11 and rations a month. The herd being always moving from one watering or grazing place to another, seldom stopping in the same camp two consecutive days, provisions in bulk (except fresh meat for which sheep from the herd are used,) are issued to the herders as often as convenient. The cost of one month's rations for one man is about $7. Six jackasses to carry the rations and camp outfit, which cost about $15 each, and the necessary arms and ammunition are furnished by the owner of the herd. An excellent breed of "shepherd dog" is used here. From 1st to 15th November, the bucks are put among the ewes—then the number of herders should be increased 50 per cent. for two months, to prevent their running during this the rutting season. From about the 15th of April to the last of May, the lambing season, most important of all, herders should be increased to five for every one thousand head of ewes, or fifty men for the herd, these extra herders to be kept about six weeks, and are usually paid the same or possibly a little more per month than the regular herders are, and can always be hired from the settlements. About 1500 bucks are necessary for the 10,000 ewes; they cost about $1.25 to $1.50 a head. Some of our more intelligent sheep owners are now bringing Cotswold and other fine blooded bucks to improve the breed. Average increase in live sheep at the end of the year from 75 to 80 per cent. Two to three year old common Mexican mixed sheep, bucks and ewes, yield an average of one and a-half pounds of wool a year. This statement is made in a liberal spirit towards the sheep raiser, so that he will find on coming here, that while all the prices for cost and herding are full, the ratio of increase and weight of fleece is estimated rather low. The table lands and hill sides are abundantly supplied with a variety of nutritive grasses, which being cured by the operation of the climate, afford excellent pasturage throughout the year. The most valuable and widely distributed of these is the grama grass, its peculiar value consisting in its adaptation to all the requirements of an arid climate. It grows during the rainy season and ripens a large quantity of seed as the dry season approaches, while the leaf and stem retain most of their nutritive qualities in drying, forming superior feed for sheep during the entire season. The herdsmen and shepherds of New Mexico being thus furnished with natural pasturage through the winter months, have a great advantage over the sheepraiser of the northern and southern states, who are obliged to expend much of their time and labor in the preparation of food to sustain their sheep during the winter months, nor is any shelter necessary. The immense range afforded by the extensive pastures of New Mexico has a very beneficial effect on the health of sheep, the diseases common to many localities are here almost unknown."

A very large proportion of the present stock of sheep of New Mexico are the descendants of the Spanish Merino of other days. The ewes are small, weighing about 33 pounds average, with coarse wool, but celebrated as remarkable breeders, hardy and healthy the year round, and adapted to breed or cross with the imported Cotswold and Merino bucks, as has been proven by actual experiment during the past few years. The former are purchased in the Territory at an average price of $2 per head for breeding purposes, in the months of August, September, October and November. When bought with lamb running, or pregnant, $1 per head extra is charged usually. Wethers, for mutton 1½ to 5 years old, mixed lots and ages, $1.25 to $1.75 per head; imported Canada bucks, $30 each; Spanish ewes, purchased in Chihuahua, and on Mexican soil, 400 to 600 miles distant, can be had, duty (20 per cent.) paid, for $1.10 to $1.65 per head in specie, including expense of driving, which must be done by experienced parties.

Regarding cattle, large numbers of mixed grades are driven yearly from Texas, following up the Pecos river, when reached, to a point 120 to 200 miles from Santa Fé, where the stock is rested and grazed, usually until the middle of, and sometimes until after the rainy season, when, as a general thing, the herds begin to move towards Colorado and a market. During the interval of resting, the herds accumulate, and prices range as follows: yearlings, $5 to $7; twos, $9 to $11; threes and cows, $13 to $15; bullocks, 4 years old and upwards, $18 to $22.

We have mountain, valley and extensive rolling prairie lands adapted for pastoral purposes. No hay, shelter or grain is provided for stock, yet we can boast of as fine, fat beef and mutton as is pastoral-raised anywhere in the world.

The *Cimarron News* of this spring, in concluding an article on sheep grazing in New Mexico, remarks :

* * * "In New Mexico the per centage of increase being commonly measured simply by the productive powers of the flocks. This brings us to say, that the preëminent advantages which New Mexico offers to wool growers are fast becoming known and appreciated. Within the last six months a large number of enterprising men from California have come here for the purpose of engaging in the sheep business, and from them we learn that there will soon be a large immigration from that quarter. The fact is the sheep ranges have become almost exhausted in many portions of that state. By excessive grazing the native grasses have been killed, while the price of land has become so great as to very materially reduce the profits of the business. In casting about for a new field of operations, these men have decided upon New Mexico as being in all respects superior to any other known region. The *united testi-*

mony of those men who come here is, that the mild climate, the excellence of the grasses, and the extended ranges which we possess, render *this country the most desirable location in the United States for their business.* We may expect to see many large flocks of fine sheep brought into this county during the coming season, and we welcome them as valuable additions to the production of the region. There is ample room for all who want to come. From the mountains to the Texas border there is one continuous and magnificent range, in any portion of which may be found water, shelter and grass. There is no doubt that a few years will see New Mexico the greatest wool producing state in the Union, and the present influx of enterprising Californians, having both capital and experience, will be an important factor in the achievement of that important result."

METALS AND MINING, HOT SPRINGS, Etc.

The great wealth of New Mexico, in the precious, as well as in many of the baser metals and stones, is every day becoming more and more an admitted fact. All intelligent observers of the mineral indications here concur in pronouncing them at least equal to those found *in any of the great mining regions* of the United States. "Undoubtedly the latent and undeveloped mining resources, the lodes and placers of this Territory," reports the United States Surveyor General, "need but the application of capital and machinery to render New Mexico, on their account, *the peer of either of the states and territories* famous for their mineral deposits and coal fields." Hitherto the immense mineral wealth of the Territory has been allowed to lie comparatively occult and dormant, for New Mexico has been allowed to remain *the least known of the territories.* Unlike some of her sisters, whose public men and whose local press have presented them to the world *nolens volens*, as the true El Dorado found at last, New Mexico has not in like manner sought or received attention, immigration and wealth. But now that the advent of railroads is near, now that her traditional red enemy has gone to his reservation, and now that the stream of emigration approaches, her day of empire dawns.

As the Territory has been as yet but slightly prospected by the searcher for mines, and as those found remain in almost every instance undeveloped for want of capital and machinery, its resources in this great element of material wealth are comparatively unknown, though they are not undoubted. Evidences of mines worked in ancient times by the Spaniards, who are said to have furnished from New Mexico large quantities of gold and silver, are frequently found in different portions of the Territory, and work been renewed upon them. We cannot now refer in detail to all the mining districts in the Territory, or the mines therein promising or yielding best, but we desire to demonstrate from what we know and state, that mining in New Mexico will ere long become a very prominent and important industry of the country.

The mines and placers and coal fields of the territory seem, from the discoveries made and from the indications, to exist scattered all over the country. Gold, silver, iron, quicksilver, marble, coal, building stone and precious stones—indeed nearly all the known metals and other productions of the ground, which contribute to the use and pleasure and wealth of men—appear to exist in New Mexico.

The Commissioner of the General Land Office in his annual report for 1868, says of our mineral resources, that valuable minerals are found in every portion of New Mexico. In numerous localities may now be seen shafts and drifts, the work of former generations, and the only monuments left of their energy, activity and industry, while *the almost daily discovery of new lodes of gold and silver bearing quartz and auriferous placers* indicate that mining operations in the future will be as productive as in the past. New Mexico, Arizona, Nevada and Southern California present an area of productive soil and genial climate that promises under the stimulus of railway communication to attract and support a large industrial population. Both the agricultural and mineral resources of these regions are on a magnificent scale.

The present United States Surveyor General for New Mexico, in a recently published letter to the General Land Office at Washington, says of the Territory: I have travelled to Fort

Bascom on the Canadian river near the Texan frontier, a round trip of about three hundred and fifty miles, and to Fort Craig, down the valley of the Rio Grande, another journey of about the same extent. I made these trips mainly that I might learn something of the characteristics of the district and its people from personal observation. Including the route from the territorial boundary near Trinidad, Colorado, to this city, my travels in the district amount to above one thousand miles; and I am satisfied that this Territory deserves better and more liberal treatment than it has ever received; it appears to be *misrepresented, and generally friendless and forlorn*, BUT IT HAS IMMENSE LATENT RESOURCES. I believe it has *more gold, silver and copper* than Colorado or Nevada, and there are also *vast quantities of iron, lead, coal and other minerals*, together with plenty of good timber. It has a most salubrious, mild and equable climate, and *cannot be excelled for grazing purposes.* All its fine valleys and almost endless plains are feeding grounds, covered the year through with nutritious grasses, and stock does not require to be housed at any time, the winters are so mild and stormless. Fruit, especially grapes, together with vegetables and grain, flourishes in all the valleys and wherever the land can be irrigated.

The congressional appropriation of 1868 for a geological survey of Colorado and New Mexico being inadequate to secure a thorough one, the work of the geologist was necessarily brief and imperfect; yet in an examination of only a few days spent in New Mexico (no portion of which was given to the west side of the Rio Grande), he reports the following "*minerals of comcial value*," and the localities where observed:—

Iron Pyrites, Copper Pyrites—Mostly auriferous, widely distributed in veins over the flanks of the Rocky Mountains in New Mexico, and in numerous lesser chains of granitic and metamorphic rocks.

Malachite, green vitriol, blue vitriol—Principally from decompositions of the above wherever the ores have been exposed to weathering. Widely distributed in veins over the flanks of the Rocky Mountains in New Mexico, and in numerous lesser chains of granitic and metamorphic rocks.

Zincblende, often argentiferous—Sandia, etc.

Galena, often argentiferous—Maxwell's, near Mora.

Brittle Silver—Maxwell's, near Mora.

Fahlerz—Maxwell's, near Mora.

Specular Iron Ore—Real Dolores, near Ortiz mine.

Red and Brown Hematite—Widely distributed; Old Placer, etc.

Magnetic Pyrites—New Placer.

Coal—Raton mountains, Maxwell's, Real Dolores, etc.

Cerussite—Maxwell's.

Anglesite—Maxwell's.

Native Gold—Arroyo Hondo, Moreno, Brahm Lode, New Placer, etc.

Native Silver—Maxwell's.

Horn Silver—Maxwell's.

Titanic Iron Ore—Real Dolores.

Smithsonite—Sandia.

Silver Glance—Moreno, New and Old Placers.

Light and dark Ruby Silver—Maxwell's.

Spathic and Micacious Iron Ores—Real Dolores.

Turquoise—Cerrillos, between Santa Fé and San Lazaro mountains.

The valuable ores abound, continues the geologist, almost everywhere in the granite and gneiss of the Rocky Mountains, and the economic question is *not to find the material, but the capital and labor with which to work.* That the country over which these investigations were made is replete with those minerals which by their decomposition are found by experience to most enrich the soil, as it is with the before-mentioned minerals of commercial value.

Gold is known to exist in over fifty different localities in the Territory. It and silver must have been known and extensively mined by the Aztecs, as the presence of their old ruins is said to be an almost unfailing indication of mines. The Spaniards mined gold, silver, and copper in this region, and Jesuit priests more thoroughly prospected it *than it has been since.* They reported at all points great riches, and the existence of all the precious metals. At the Placer Mountain, the Old and New Placer, quartz lodes have been opened since the war.

At Moreno mines, at Ute Creek, and other tributaries of the Cimarron and Red river, large deposits of gold have been discovered and worked. The Commissioner of the General Land

Office, in his report of 1868, says of the Aztec mine at Cimarron:

There has recently been received at this office a specimen of ore, consisting of a silicious deposit of exceedingly loose texture, through which are interspersed fibers of pure gold, some of which exceed two inches in length. It is claimed that an assay made at the Denver mint of a specimen of this ore, in which no gold was visible to the eye, *yielded at the rate of* $19,000 *to the ton.* The locality in which this specimen was obtained is on the headwaters of the creek, a branch of Cimarron river, and the existence of the deposit was hitherto unsuspected.

The gold found in the gulches is shot-gold mostly. The specimens from the lodes are rich quartz, and the gold can be distinguished with the naked eye. This whole section is evidently abounding in gold.

At Pinos Altos, quartz gold-mining has received considerable attention. Thirty lodes were discovered, paying from forty to two hundred dollars per ton. In this district two years ago thirty lodes of gold quartz were worked, ten of silver or a combination of silver and gold, and three of copper. There have been picked up in one day in a gulch at Pinos Altos ores of gold, silver, lead, zinc, magnetic iron, and plumbago. The number of mines now worked there has largely increased.

Twenty seven miles from the City of Santa Fé is the Real de Dolores or old Placer, discovered in the year 1833, and from that up to 1840 it contained a population varying from 2000 to 3000 persons, the most of whom were engaged in washing out gold, laboring under great disadvantage on account of the scarcity of water, it being necessary to carry the dirt to the water, a distance of nearly two miles, or pack water in kegs and barrels to the dirt; there were at one time some dozen or more stores there with merchandise; the amount of gold taken out by this rude process is variously estimated *from* $300,000 *to* $500,000 *yearly.* Many rich gold-bearing quartz lodes were discovered, but owing to the want of water and proper machinery were not worked to any extent.

The Real de San Francisco, ten miles south of Real de Dolores, was discovered in 1840, and was considered much richer than that of Dolores, and was worked about six years, the miners laboring under the same difficulties as to water, as occurred at the Dolores; there were over 5,000 people at this place at one time, and it is stated by reliable parties who were there at the time engaged in trading, mining etc., that the diggings yielded upward of a half million of dollars yearly, the gold being of the finest quality.

Thousands of persons could here find profitable employment, with a sufficiency of water, and millions of dollars uncovered. A very large proportion of the earth of these placers was never touched or worked. The bulk of these placers are private property, covered by confirmed and surveyed grants, and invite the attention of capitalists, who must some day reap large paying results, and give employment to large numbers of miners.

At the commencement of the war a placer had been discovered in the Jicarilla mountains in Lincoln county, where some 300 miners, chiefly Mexicans, were at work, and doing well. Other companies were about to commence operations on the silver lodes of the Organ mountains. The Stephenson company had shipped a lot of machinery and material to work extensively the Stephenson silver mines. These reached their destination the very week hostilities commenced on the frontier. The mine, now called the San Agustin, is being worked.

In 1862 a large number of persons entered the San Juan region on account of the gold excitement. They built a town on the Rio de las Animas, and named it Las Animas, which they were compelled to abandon, the houses now remaining unoccupied, unless, as is probable, the town is lately reëstablished. Many of them returned to the settlements in a starving condition, although gold and silver was found in the mountains, and on all the streams tributary to the San Juan river. The mineral wealth of the San Juan country is again attracting attention, and that region is now rapidly filling with miners and settlers.

The mining district near the Mesilla valley, in the Organ mountains, has a mean altitude of 4,400 feet, and is intersected with ravines, affording most favorable opportunities for horizontal drifts in opening the veins. There is a belt or series of veins containing six principal veins, varying from two to fifteen feet in width. On the largest of these veins is the celebrated San Agustin mine. This belt of veins crosses the Organ mountain at or near the San Agustin pass, and both sides of the chain of mountains present similar features and equal richness.

The celebrated mine just mentioned was formerly known as the Stephenson silver mine, and the claimants of it under this name are now in litigation with those who during the war "denounced" it, and now claim it under the name San Agustin. The whole Organ mountains are extremely rich in silver. Over fifty mines have been discovered therein, the ore being generally argentiferous galena, admitting of simple reduction by smelting, the mines paying from $40 to $200 per ton.

The country bordering on the north portion of Chihuahua is a rich silver district. Just over our line are the mines of "Corralitos," the most successful mines in the state of Chihuahua. They have been mined for nearly fifty years. Their productiveness has overcome all obstacles, and the mines have employed annually several hundred hands.

Near the old town of El Paso tradition places the locality of one of the richest silver mines of those formerly known to the Spaniards. Its site had been lost since the expulsion of the Jesuits until last year. It is said that the Jesuits of Northern Mexico were the last to suffer the decree of expulsion, and had sufficient notice of the edict, and carefully covered up the traces of the mining there. In this way the localities of many of the richest mines of New Mexico have been lost. As the section in which this remarkable old mine is situated is a portion of the mineral-bearing mountain system of New Mexico, we will here give a condensed account of the mine and its history. The locality and history of the mine, called the *Mina del Padre*, having been gathered from the old church records at El Paso, several gentlemen there determined to re-open it, which they did in the winter of 1872-'3. The year 1680 was the year the mine was discovered by the monks of the order of Saint Francis, in charge of the church at El Paso; the same year the Spaniards under Governor and Captain General Otermin were all expelled from New Mexico by the Pueblo Indians. Skilled in the science of mineralogy, they were not slow to discover the extraordinary richness of the Padre vein, and their knowledge of the art of metallurgy enabled them to work it very profitably for many years. From the silver obtained from this mine, most of the churches in northern Chihuahua were enriched and endowed. The Jesuits were never friendly to the Franciscans, and when in the early part of the eighteenth century, the order of Jesuits obtained complete control in Spain, it was not long ere the barefooted Franciscans were ordered to depart from Mexico, and surrender their rich possessions to the dominant Jesuits. When information of the coming change reached the monks at El Paso, they quietly covered the mine, and obliterated as near as possible all traces of its existence. Years passed on, the Jesuits, if they had learned the secret of the silver treasure, never availed themselves of it. In 1792 the mine was again opened, and worked for several years by a company of Mexican gentlemen. The works for the reduction of the ores were situated near the river banks of the Rio del Norte or Rio Grande. The revolution of 1810, followed by the declaration and establishment of Mexican independence, again interrupted the working of the mine, and it was a second time filled up and abandoned, and so remained until the late re-discovery and re-opening. This was done at considerable trouble and expense. A shaft was sunk ninety feet through the material which had been used to fill up the mine, and which, from lapse of time, had become almost as firmly cemented together as the original soil. Although the main lode is not yet reached, the ores that have been taken out during the progress of excavation prove to be unusually rich. Soon after it was opened a gentleman arrived upon the ground who had come from California expressly to search for this very mine, having obtained there some clue to its value and its locality. He was not aware that similar data had been obtained at El Paso, and he was just in time to be too late. The mine is situated at the southern point of the Organ mountains, here about 1,500 feet high, two and a half miles from the City of El Paso, and is a lode or vein of black chloride of silver, containing sulphurets, the out cropping about forty feet wide. This immense lode, or vein, runs north and south, dipping to the west at an angle of 45°. The silver lode lays in a bed of old red sandstone, and the overlying face rock is igneous, with traces of iron in it. There can be no doubt that this lode is extremely rich, and immensely valuable.

West from the Mesilla Valley, the principal towns in which are Mesilla, Las Cruces and Doña Ana, is the new and very flourishing mining town of Silver City. The mines were discovered in the locality in the spring of 1870; and since then Silver City has been founded, and now has a population of nearly fifteen hundred, the town containing, besides miners and mining establishments, lawyers, physicians, preachers, editors and so forth, and churches, schoolhouses, printing offices and mercantile houses; some of the most handsome brick dwellings too, being found there. Most of the mines opened and worked in that section well sustain their reputation. Governor Arny, two years ago, obtained specimens from upwards of sixty different mines and lodes in that section. On the Mimbres river, in the same section of country, or near that stream, is an extensive gold placer, which was formerly worked by the Mexicans in a very rude fashion, and yielded well, though they had to carry the dirt to the water; whether worked or not we are not aware. A canal to convey water a few miles in length at this point, would develop an extraordinarily rich gold deposit.

On the headquarters of the Rio Gila, in New Mexico, and on its tributary, the Rio San Francisco, in Arizona, discoveries of gold, silver, copper and quicksilver have been made; the gold prospecting in the bed of the stream from one cent to one hundred cents to the washing pan. It was in this region where the Indians procured the gold to make the bullets which the explorer Aubrey, twenty years ago, found in use among the wild Apaches there.* Placers of gold are found throughout the mountains along those streams; but for the present the lack of water necessarily renders them unavailing, comparatively.

Accessible to the Rio Grande, south of Alburquerque, lying in the mountain ranges which bound the valley on either side, for nearly its entire length, are *extensive deposits of mineral wealth, waiting for the capital, skill and labor to develop them.* This development, but just started, will begin in earnest as soon as the railroad reaches Alburquerque, but will be greatly accelerated by the construction of the proposed branch down this valley to El Paso and on to Chihuahua. These may be briefly itemized as follows:

1. In the range east of the Rio Grande, known in different parts of its course as the Manzano, Jicarilla and Organ moun-

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* In his report of meeting the Indians with golden bullets, Mr. Aubrey says: "They are of different sizes, and each Indian has a pouch of them. We saw an Indian load his gun with one large and three small gold bullets to shoot a rabbit. They proposed exchanging them for lead, but I preferred trading other articles.

tains, but called generally in connection with the Sandia mountain, the "Organ Range," are found veins of silver and copper (many of which were formerly worked by the Spaniards,) almost wherever it has been explored. This range lies from 18 to 25 miles from the river.

2. On the same side of the Rio Grande, north of Fort Craig, occur the excellent coal mines of Don Pedro, and veins of copper, galena and iron ore.

3. On the east side of the river is a range formed of spurs from the Sierra Madre, which are called at different points, the Mimbres, Magdalena, Ladrones, San Mateo, and (north of Alburquerque) the Jemez and Abiquia mountains. In this range, whose north and south extent is over 250 miles, *rich lodes of copper are numerous.* It is found at certain localities almost in a pure state, and at others combined with gold and silver. There are two copper mines at Jemez—one large, of virgin ore, and heretofore extensively worked. There is a large mine in the Magdalena mountain, west of Socorro, of copper, with a large percentage of silver, new developments of which within the last several months are exceedingly promising. Recently also, within the Magdalena mountain section, mines of other metals have been discovered, and some of them opened and worked, and the reports from them show that they are valuable, and that Spring Hill mining district, embracing them, will, in due time, become one of the most productive in the Territory.

Upon, or accessible to the surveyed route of the 35th parallel railway, west of the Rio Grande, there are,

1. The deposits of coal in the valleys of the Puerco, the Rito, the Jemez, and north of the San Mateo mountain.

2. A fine *marble* quarry, on the Rio Salado, a branch of the Jemez, about 25 miles west of the Rio Grande. Mr. Holbrook, civil engineer, reports the *quality equal to that of the celebrated Rutland quarries*, and that the deposit is *very large and accessible.* "Large quantities of gypsum were seen near this point, and also on the Jemez, south of the junction of the Salado, where our party saw more marble."

3. Near Jemez, about 30 miles west of the Rio Grande, was recently found *serpentine* of great beauty, easily quarried, *in any sized blocks.*

4. Very extensive beds of gypsum immediately adjoin the railroad survey line near Rito, 40 miles west of Alburquerque. They are reported by the geologist to be of a *very pure quality*, lying in regular strata, presenting a continuous bluff 80 to 100 feet thick. They are amorphous and fibrous. The value of this material in its crude form as a fertilizer is well known, and may eventually give rise to an *extensive demand for distant transportation.* In other respects it will prove valuable in a prepared form, and can be extensively used in different processes of building, and in various other forms.

Saltpeter is common, but is rarely found pure. At one place near the international boundary line, it is found pure, near a spring where extensive deposits are made upon the clay, whence it is gathered in considerable quantities, mainly by the Mexicans from the city of Chihuahua, the locality being just within the Mexican territory. The state government of Chihuahua regulates by law its collection, and, in like manner attempts the prohibition of its exportation.

In New Mexico plumbago has been found in many localities. Zinc is found in the Sierra Madre, in the Sandia mountain and in the San Juan country. We do not remember to have heard of it elsewhere. Quicksilver, virgin and cinnabar, is found in the Rio Grande country, below the Taos mountain pass. Old Spanish records mention the Mogollon mountain as "the place where cinnabar is found."

The deposits of iron ore are numerous, extending from the Raton mountains to the Placer and Sandia mountains, overlooking the Rio Grande. It is found of excellent quality near Las Vegas, where we traced two veins, one of magnetic oxide, 4 feet thick and very rich, and the other of specular iron ore, also rich, and 6 feet in thickness; at the Placer mines, south of Santa Fé, where are three veins, 6 to 10 feet thick, of rich magnetic iron ore; also, on the Maxwell grant; in the Apache Hills, north of Fort Union; and near Jemez.

Many of these deposits being quite near to coal and limestone, their value is greatly enhanced for manufacturing purposes. Such is the case in the Raton mountain, at the Placer mountains, and with those at Maxwell's. At the Placer mountains, south of Santa Fé, there is sufficient timber within a radius of 10 miles from the Tuerto ore, to smelt a half million of tons—even if the coal should not answer.

Gold, silver, copper, lead, gypsum, china clay and salt have been developed in great abundance between the Arkansas and the Rio Grande, in the Rocky mountains, and their foot hills. The localities may be briefly named:

Placer and quartz gold at the Moreno mines, 18 miles from Maxwell's—where about 2,000 miners are at work.

Also, at the Placer mountains, south of Santa Fé, which have been worked a long time, and are very rich. From the placers there at least $1,000,000 has been taken. Here the New Mexican Mining Company have 40 stamps at work, and expect to take out $200,000 in gold the coming year. The number of productive veins in this Placer mountain district is extraordinary—20 having been shafted upon in the San Lazaro mountain alone. These mines alone will furnish a heavy traffic to a railroad, and attract a large population, but they comprise only one of the numerous similar localities in New Mexico.

Gold bearing quartz is also found in the Sandia mountain, where Captain Colton visited two veins near Tejon. And gold dust is reported in nearly all the arroyos near this mountain.

At the base of all the Placer mountains the drift is impregnated with gold, and it is proposed to lead water from the Pecos river, 68 miles distant, by a ditch, at an estimate cost of $250,000, for the purpose of washing it, for which a company has been formed.

Gold is found in the range east of the Rio Grande, in New Mexico, to a large extent—for 100 miles south of Santa Fé, and northward for 120 miles to Sangre de Cristo.

Silver and Lead.—The Sandia range, 18 to 25 miles from the Rio Grande, which it adjoins on the east, is the great repository of argentifierous galena in New Mexico, and its mines have been extensively worked in former times by the Spaniards—using the Pueblo Indians as slaves.

Captain Colton and Dr. Bell visited a number of mines in this district, and report them apparently rich, as also the veins of argentiferous galena in the Placer mountains. Both are described in detail in Captain Colton's report. The Sandia mountains are the great "Organ range" of New Mexico, which extend from the Galisteo southward for over 200 miles, and in which are found throughout lodes of silver and copper, many of which were worked by the old Spaniards before the Pueblo Indians rose and drove them out, two hundred years ago, filling up these mines.

Silver lead is also found in the Moreno mining district, near Cimarron, on Maxwell's grant, and in Turkey Mountain, north of Fort Union, but has not been developed as yet in either locality. .

The beds of auriferous copper ore on the surveyed railroad route, which are very numerous and rich, will probably be found to furnish the most profitable business of all to a railroad. Many of these ores in the Placer mountain district will bear a freight charge of $50 dollars per ton, and yield a handsome profit to the miner and smelter. This would pay 6 cents per ton per mile to Kansas City. For some time, until labor becomes cheaper, and capital more abundant, it is probable that a large amount of these, as well as of the silver ores, will be transported to the Missouri or Mississippi—there to be smelted—especially as the road can afford for several years, while the process of building up this country is going rapidly on, to carry ores as return freight, at a very low charge. They must eventually all be reduced here where coal abounds.

These copper ores are found in the Cimarron district; in Turkey mountain, north of Fort Union; and on the Sandia mountains, adjoining the Rio Grande; along the whole extent of the Organ range; and in abundance in the Placer mountains, south of Santa Fé, where we visited several good veins, one of which was over 20 feet thick, and reported to contain from 15 to 26 per cent. of copper, and also to be rich in gold.

On the San Ysidro mountain, in this district, there are numerous lodes of copper, as well as silver and gold, which were worked many years ago—before the memory of the oldest inhabitant. The ruins of numerous furnaces and arastras are to be seen.

On a rich vein, recently opened in Tijeras Cañon, on the Sandia mountain, one mile from the town of Tijeras, and close to the railway surveyed line (east of the Rio Grande,) the shaft has been sunk about 200 feet—the vein being 8 feet thick, and improving as the mine deepens. A large quantity of good ore had been taken out, and a smelting furnace was erected close by.

There are good veins of very pure China clay in the Placer mountains; and gypsum, which the Mexicans use as plaster, for window lights, etc., is very abundant along the route from the Purgatory valley, to and into the Sandia mountains, where, at the towns Tejon and Uña de Gato, quite a business is carried on by the people, who make plaster and sell it at Santa Fé, and along the Rio Grande, for $1 per bushel. It may be expected to furnish a considerable local business. Near Tejon, Captain Colton rode over an extensive bed of gypsum, crystalline and opaque, which was three miles long, 300 yards wide, and 10 feet deep, and on Tecolote creek it was equally abundant.

On the great plateau of the Rocky Mountains, southwest of Cañon Blanco summit, are the Salinas, which furnish an unlimited quantity of good salt. A large part of New Mexico is supplied from here, it being wagoned to Santa Fé, Las Vegas, to the towns along the Rio Grande, and even to Chihuahua. The only cost is that of transportation. It occurs in quantity in many places in New Mexico, often mixed with alkali—and also pure in lakes. One vein is in the neighborhood of Fort Stanton. *The evaporation in the salt lakes makes an annual deposit of salt several inches in thickness, coarse, strong, and of the best quality.* It has often been taken to the city of Chihuahua for sale, as the salt of that state is inferior, being mixed with alkali. The principal lakes are in the valley between the Organ and Sacramento mountains; one lake on the Texas line, and the best one sixty miles northward, and another large and excellent one about sixty miles south of Santa Fé, near the town of Manzano, whence many wagon loads are regularly carried to Santa Fé and other distant points, the article forming quite a commodity of interior commerce.

Coal is very abundant in numerous localities in New Mexico, and will furnish a heavy traffic for the supply of the timberless districts of the plains, and the mines and mills in the mountains—the latter trade being in proportion to the extent of the development of the mines of precious ores, and those of copper, lead, iron, and so on.

Deposits of coal are known to extend as far west as the Moqui villages, more than 300 miles from Alburquerque, where Dr. Newberry saw a bed 12 feet thick.

The most westerly deposit reported by Dr. Parry was on the Zuñi Pass line, 15 miles east of the Indian pueblo or town of Zuni, where he saw a bed 4 feet thick, near Pescado Springs, at a good elevation in the bluffs for mining, and to all appearances sufficiently extensive to be valuable: in quality rather slaty at outcrop, but likely to improve as opened. There were also other beds, the outcrop showing along the bluff for several miles. This is 140 miles west of the Rio Grande at Alburquerque.

In the Sarcino Cañon, about 30 miles west of the Rio Grande, and within 3 miles of the surveyed line on the Rito, are three distiuct seams of coal, averaging 3 to 4 feet in thickness; one of these is 4 feet thick, and apparently without any included slate veins. It dips about 40°, and the quality is not very good at the outcrop, but it may improve at greater depth. The extent of the deposit remains to be proven, but as we hear of coal existing north, south and west of this locality at intervals over long distances, there is a reasonable prospect of finding an abundance of fair coal.

Dr. Parry found near Acoma, 60 miles from the Rio Grande, west from Alburquerque, *cannel coal in veins as thick as* 20 *inches*, which *the Indians use for jet ornaments*, and very good coal at San Jose, 7 miles west of Cubero, in three veins, of which the total thickness was three feet—the thickest seam being 20 inches.

On the *San Felipe* line, near Gavilan Pass, 20 miles from the town of El Rito, is found a good vein of coal of workable thickness. And on the same line, near San Pedro, on the divide between the Puerco and the Jemez, was seen a vein of fine cannel coal, two feet thick, and nearly everywhere indications of an abundance of cannel coal; this was 60 miles west of the Rio Grande. We were informed of numerous veins of coal, two to four feet thick, and covering an area of 40 miles, existing at Agua Azul, but did not see them. Dr. Wizlezenus saw coal near the village of Jemez. Good coal is found immediately west of the Sierra Madre, near Fort Defiance, and is reported to extend to within a few miles of Campbell's Pass.

The proposed railway via San Felipe, north of San Mateo mountain, will probably lie nearer to extensive deposits of good coal than those further south. Several localities of coal, in thick beds, are reported in that country, between Jemez and the Sierra Madre; and Simpson saw coal in the Cañon de Chaco, near the 36th parallel, almost due north of San Mateo.

The occurrence of anthracite coal in workable beds in the western territories, near the gold and silver mining districts, is of such importance that a reference to the anthracite coal beds between the Old Placer mountains and the Cerrillos in Santa Fé county, occurring as they do in connection with carbonate of iron and hematite, and having *numerous veins of rich magnetic iron ore* within a few miles of them, cannot fail to command the attention of the intelligent reader. The outcroppings of coal in the district referred to were first exposed in the center of the little branches that run into the Galisteo. The first one is about four miles south of the Galisteo. The following section of the strata was taken ascending:

1. Laminated clay, with thin seams of sand passing up into carbonaceous clay as a floor for coal.
2. Anthracite, 5 to 6 feet.
3. Drab clay, indurated, 15 to 20 feet.
4. Ferruginous sandstone, passing up into a light grayish sandstone 30 to 50 feet.

The mine is opened by a tunnel 90 feet in length; the dip is 15° to the east; this coal contains 88 per cent. of fixed carbon. In another locality the coal is opened by three tunnels, two twenty-five feet long, and one forty feet long, and has a thickness of four feet of anthracite. The coal from this mine contains 87 per cent. of fixed carbon, and when burning shows only the short, blue flame of carbonic oxide. This coal has been in use in driving the engine of the New Mexico Mining Company's stamp mill in the vicinity. A hundred pounds brought to Santa Fé was used by Professor Bruckner in his assaying furnace, in order to test the heating power practically. He found that a white heat was reached in a very short time, and that this heat lasted about three times as long as that produced by an equal weight of charcoal. As the material does not coke in the least, it is evident from this test that it is perfectly adapted to use in blast furnaces, though it will require a higher pressure of blast on account of its density, than charcoal or coke. As far as its application for all practical purposes is concerned, it is undoubtedly fully equal to Pennsylvania anthracite, and really the best fuel discovered so far in the West.

Between these two mines exists a bed of excellent fire-clay. It has been thoroughly tested, and proved to be fully adapted as fire-proof material for furnaces.

Coal banks have been opened at a number of points to the north of the above mines, and *the proof is conclusive that it exists in large quantities.* Between the clay and the following sandstone stratum, beds of iron ore are found. Both carbonate and hematite are present. Ores of this kind, as well as veins of magnetic iron of great purity, abound in this vicinity.

The existence of mines of gold and silver, of lead, zinc, copper and antimony, and of the different ores of iron, in almost immediate connection with deposits of anthracite coal, and fire-proof material, indicates at once the valleys of the Galisteo and Santa Fé, as points which have all the natural requirements to guarantee the erection upon a large scale of metallurgical works and machine shops for railroads, etc.

Other coal beds have been found in the county of Santa Fé, mainly upon the Santa Fé, the Tesuque, and the Galisteo streams.

In the Tijeras cañon, in Bernalillo county, a mile and a half above the town of Tijeras, a vein of bituminous coal four and a-half feet thick, was seen and traced by sinking shafts along the vein for a distance of two thousand feet, by the engineer of the railroad survey.

In the Pecos valley coal has been found in various localities, and also in the Gallinas valley, in San Miguel county. There is a fine bed of it five miles above the town of Anton Chico, on the Pecos, and another on the eastern slope of the Chupaines mountain, near the town of Las Vegas, on the Gallinas.

In the Cimarron section a large vein of coal, fourteen feet thick, is reported on Rabbit Ear Creek, four miles below the wagon road ford.

Accessible to the Rio Grande valley, *from the mouth of the Galisteo southward to El Paso,* a large amount of coal is found. The following are the localities reported, of which those on the Puerco, in Tijeras cañon, and near Don Pedro, are the only ones that have been actually examined.

1st. Near San Felipe, thickness and quality reported good.

2d. Six miles east of Algodones, reported very good.

3d. In Tijeras cañon, already referred to, 4½ feet thick, quality at outcrop not very good; expected to improve when opened.

4th. West of Los Lunas on the Puerco, of fair quality—has been used in government shops.

5th. Near La Joya, on east side of river.

6th. In the Sierra Magdalena, west of Socorro.

7th. North of Fort Craig, 8 miles east of Don Pedro, vein 5½ feet thick. Dr. Leconte, geologist, examined this bed, and reports it of good quality, and that it may be worked for many years.

8th. In the Caballo mountains, on east side, below Craig.

9th. At Robledo.

10th. Abundantly near Doña Ana and Mesilla, on both sides of Rio Grande, 3 feet thick of good bituminous coal.

In reference to the proposed railroad branch from Albuquerque to El Paso and Chihuahua, these deposits along the Rio Grande assume great importance. They will furnish a large traffic to the road, besides enabling it to be operated cheaply. They are also invaluable to the *mines of silver, gold, copper, lead and iron, which line both sides of the Rio Grande almost continuously*, enabling these ores to be cheaply produced and smelted; and they will furnish fuel to the large agricultural population which will before long fill up this unwooded valley.

Coal and iron are generally associated, that is to say, the widely spread ores of iron are generally found in connection with workable coal beds, and their value depends much upon this connection. Recent extended examinations show that the largest and most valuable of the recent coal deposits are connected with the tertiary strata, such being the formation in which the thick beds of carbonaceous deposits are met with along the eastern slope of the Rocky Mountains, extending from the vicinity of Long's Peak, to the western tributaries of the Arkansas in Colorado, and the Cimarron, the Canadian and the Pecos in New Mexico. But besides these well determined beds, so conveniently located for railroad purposes, we meet with other deposits in the valley of the Rio Grande, the Puerco of the west, the San José and Ojo Pescado, *showing an extension of the coal deposits fully two hundred miles west of the Rio Grande.* The precise character of these deposits is not yet fully determined; most of the beds here exposed consist of thin irregular seams, widening out at points to a workable thickness, and at other times associatated with igneous protrusions that have converted them into anthracite. The most promising of these beds are those connected with the Puerco coal basin; they present a succession of beds from two to five feet in thickness, generally steeply inclined and associated with shales and sandstones, containing frequent bands of iron ore. To determine satisfactorily the precise character and actual value of these deposits would require detailed examinations and extensive excavations, which can be more advantageously effected in the process of railroad construction. In the meantime the large extent of country over which these deposits are found, warrants a reasonable expectation, that when thoroughly examined, the coal product of this section will be ample to meet the requirements of railroad fuel, and also afford freighting material for transportation to destitute districts.

Other crude material connected with the work of economical railroad construction, such as building-stone, lime, cement, gypsum, clay, etc., are located along the surveyed line of the road at such distances that they can be conveniently employed in processes of first construction and repairs, and also afford material for transportation. In this class is especially noticeable the superior quality and great abundance of rock, suitable for buildings or heavy masonry, which in different varieties of texture and composition adapt them to a great variety of special uses.

In general terms it would be safe to assert as the result of observations over this entire mineral region, extending *from the eastern base of the Rocky Mountains to the Pacific coast*, that the proper railroad facilities comprise *all* that is necessary to induce capital and labor to enter into this new field of mining industry, and develop to the fullest extent its productive resources.

Enough has been shown in the foregoing to prove that a large amount of good coal is found between the Arkansas river and the Pacific, sufficient not only to answer all the purposes of a trans-continental railroad, and the resident mining, manufacturing and farming population, but to furnish a large traffic for transportation to less favored districts.

The coal trade will, in all likelihood, be one of the largest sources of business such a road will have. It remains to be ascertained whether the varieties found are as well adapted to the reduction of iron, as they undoubtedly are to locomotive use. If so, the supplies at Cañon City, on the Vermejo, in Colorado, and near the Placer mountains, and along the Rio Grande, in New Mexico, will prove of the greatest value, in consequence of their occurring in connection with rich beds of iron ore, and close to limestone. And, before long, we may expect this country to be filled with furnaces and rolling mills like the rugged mountains of Wales.

Mineral, and warm and hot springs are met with in almost every portion of New Mexico. We shall briefly refer to some of them. The principal hot springs are found respectively near Las Vegas, in San Miguel county, near Don Fernandez, in Taos county, at Ojo Caliente, in Rio Arriba county, near Jemez, in Santa Ana county, near Fort McRae, in Socorro county, and Fort Selden in Doña Ana county, and at Mimbres, in Grant county.

The Las Vegas spring is about six miles above that town on the west bank of the Gallinas. The spring, on account of the valuable medicinal qualities of the water, has a fine reputation, and the locality is a pleasant place of resort. Many invalids visit it from the States, and from the surrounding country, the accommodations, both for invalids and visitors, being excellent.

The Don Fernandez spring is situated at the foothills of the mountain near Los Ranchos, on the south side of the Rio Grande de Taos, about three quarters of a mile from it, and about six miles from the town of Don Fernandez de Taos. The water is of a good temperature for bathing, the spring being more properly a "warm" than a "hot" spring, and is said to possess valuable healing qualities.

The Ojo Caliente spring is one possessing an excellent reputation, due to the acknowledged efficacy of its water in curing disease. The accommodations are also good and ample, though the surroundings are, perhaps, not so attractive to the pleasure-seeking visitor. It is within a few hundred yards of the old Mexican town of Ojo Caliente to the east, the spring being immediately on the west bank of the stream of the same name, and the town standing on the elevation at the east edge of the river valley. The stream and the town take their names from the spring—*ojo caliente*—being the Spanish for hot spring. From the city and neighborhood of Santa Fé the resort receives a large proportion of its visitors.

The Jemez spring is near the Mexican town of Cañoncito, and about 12 miles north of the Indian pueblo of Jemez, the town and pueblo standing upon the Jemez river, and the spring upon the east bank of its tributary, the Ojo Caliente creek, in San Diego cañon, about fifty miles west of Santa Fé. At present there are no adequate accommodations for visitors. The healing qualities of the water, which is of a high temperature, are said to be very good, and some instances of remarkable cures in our knowledge attest the fact. The spring is more generally resorted to from the valley of the Rio Grande. Fishing and hunting is good in the vicinity, and the place is often made the headquarters of sporting parties from Santa Fé. The Fort McRae springs called the Caballo hot springs, are about five and a half miles southwest from the fort, near the Rio Grande. They burst out from the foot of a mesa or table-land, form some large natural bathing pools, and discharge into the river about half a mile distant. They have a temperature of about 136° Fahrenheit, and contain soda, lime, magnesia, and many other chemical ingredients, a full analysis never having been published, which have brought them in great repute for curing rheumatism and all scrofulous and cutaneous diseases. There are as yet no adequate accommodations for the reception and care of visitors and invalids; but as the place shall become more and more one ef resort that want will naturally become supplied.

The Mimbres springs are two, a warm and a hot spring. The former boils up out of nearly level ground, the surrounding plain being volcanic. The stream it emits would about fill a six-inch pipe, and affords enough water to irrigate the land for about a mile and a half below. The temperature is about the proper one for bathing. We are not aware whether the properties of the water are mineral. The hot spring in the same vicinity is a great natural curiosity. It is circular, twenty-two feet in diameter, and rises to the top of a mound about one hundred feet high, and four hundred feet in diameter at base, and one hundred at top. The mound is very isolated, looming up prominently above the surrounding volcanic plain, and appears to have been thrown up by the action of the elements beneath. Its exterior, like the portion surrounding the water in the spring, has the appearance of having once been liquid, and poured out as it were over the entire surface of the mound. The water is so hot that the hand cannot remain in it more than three seconds, without being withdrawn. A goat leaped into the spring, and, though remaining only a few seconds of time, on being taking out it was lifeless, and completely deprived of hair. This spring is celebrated in southern New Mexico for the healing qualities and efficacy of its water, particularly in chronic cases. Both the warm and the hot spring are in township 20 south, of range 11 west, the former in section 18, and the latter in section 20 of the township, about twenty-five miles southeast from Silver City.

In proper connection with the mention we have made of the various national productions and characterics of New Mexico, comes a reference to what is known of our native jewels. The garnets found in the Navajo country, in the northwestern section of the Territory, are abundant, and of good quality, and their existence there has been long known. We are not aware of any discoveries of precious stones in any considerable quantity in any other section of the Territory. The United States Surveyor General for New Mexico in his annual report for 1872, in writing of the diamond region, so called, in northwestern New Mexico and northeastern Arizona, and in referring to a collection of specimens received by him from some gentlemen who had recently prospected in that region, says:—

"These gentlemen exhibit and present to me a considerable quantity of precious stones of great brilliancy and beauty, which they assure me, and I believe, were found in the region spoken of. Among these stones are said to be well authenticated and thoroughly tested rough diamonds. There are also the following classes of rough stones:—True oriental ruby, hyacinth ruby, spinel ruby, garnet, sapphire proper, emerald, zircon, topaz of different colors, amethyst, opal of different varieties, corundum, crystalized alumina, black carbon or diamond, beryl, tourmaline, and various other kinds of *native jewels of commercial value.* I am also assured that the same region contains many very fine specimens of crystalized fossils, including really immense quantities of petrified wood, the latter occurring in what is called fossil groves or forests. The soil where the precious stones have so far been found in this district is composed of crystalline matter and conglomerate, crushed, broken, and disintegrated by the action of the elements and other natural causes. There is evidence of volcanic influences in the geological formation, lava and scoria occurring frequently and in considerable quantities and masses. The prevailing rock is red and gray sandstone, the formation having the appearance of a sedimentary deposit. All stones so far found have been picked up upon the surface of the earth in natural washings, and upon the ant hills. It is believed that when proper energy is bestowed upon this branch of industry in that region it will become of commercial importance. The distance from Santa Fé to Fort Defiance, near where the stones are found, is about 200 miles due west."

The total yield of the precious metals in the United States during 1873 is said to have been $72,258,000, being an increase of about $10,000,000 over that of 1872, and nearly one-half of which, $35,000,000, chiefly in silver, was contributed by Nevada. Of the balance it is stated California contributed about $18,000,000, Utah $5,000,000, Colorado $4,000,000, Montana $4,000,000, Idaho 2,000,000, Oregon $1,500,000, Washington $225,000, and Arizona $48,000. We believe there is included in the $72,000,000, about $1,225,000 from British Columbia, and about $1,000,000 from Mexico.

It is very noticeable that inthis statement, which in substance is being published in the press all over the world, there is an *entire omission of any reference to the produce of precious metals in New Mexico,* unless the amount is included--*as much else of our productions are*—in the amount credited to Colorado. The editor of the *News*, at Mesilla, New Mexico, states that it is safe to allow for the gold and silver brought to that place from Silver City and vicinity, in the adjoining county of Grant, during the year 1873, at $3,000 a week, which gives $156,000 from Grant county alone. To this must be added the amount taken out at the mines near Socorro, and in Colfax county, which together will be about the same as from Grant. Considerable gold and silver have also been found in Santa Fé, Taos, and Lincoln counties, and a portion of the San Juan mines are also south of the Colorado line. These amounts must reach as high as $350,-

000. We hope the people of New Mexico and their press, says the editor, will unite in gathering the statistics of not only our crop of precious metals, but also of the wool, hides and pelts shipped, and stock driven from this Territory, that it may *receive the credit due for its productions.*

In concluding the foregoing chapter, embracing the subject of mines and (quartz and placer gold) mining in New Mexico, we deem it proper to append, for ready reference, for the use and benefit of miners and other dealers in gold dust the following table:

Showing the value of any amount of Gold Dust, from 1 grain to 10 ounces, at $16 to $23 per ounce.

No.	$16 00 per oz.	$17 00 per oz.	$18 00 per oz.	$19 00 per oz.	$20 00 per oz.	$21 00 per oz.	$22 00 per oz.	$23 00 per oz.
OUNCES.								
1	16	17	18	19	20	21	22	23
2	32	34	36	38	40	42	44	46
3	48	51	54	57	60	63	66	69
4	64	68	72	76	80	84	88	92
5	80	85	90	95	100	105	110	115
6	96	102	108	114	120	126	132	138
7	112	119	126	133	140	147	154	161
8	128	136	144	152	160	168	176	184
9	144	153	162	171	180	189	198	207
10	160	170	180	190	200	210	220	230
PENNYWEIGHTS.								
1	80	85	90	95	100	105	110	115
2	160	175	180	190	200	210	220	230
3	240	255	270	285	300	315	330	345
4	320	340	360	380	400	420	440	460
5	400	425	450	475	500	525	550	575
6	480	510	540	570	600	630	660	690
7	560	595	630	665	700	735	770	805
8	640	680	720	760	800	840	880	920
9	720	765	810	855	900	945	990	1035
10	800	850	900	950	1000	1050	1100	1150
GRAINS.								
1	3⅓	3½	3¾	4	4⅙	4⅓	4½	4¾
2	6⅔	7	7½	8	8⅓	8⅔	9	9½
3	10	10½	11¼	12	12½	13	13½	14¼
4	13⅓	14	15	16	16⅔	17⅓	18	19
5	16⅔	17½	18¾	20	20⅚	21⅔	22½	23¾
6	20	21	22½	24	25	26	27	28½
7	23⅓	24½	26¼	28	29⅙	30⅓	31½	33¼
8	26⅔	28	30	32	33⅓	34⅔	36	38
9	30	31½	33¾	36	37½	39	40½	42¾
10	33⅓	35	37½	40	41⅔	43⅓	45	47½

MANUFACTURING FACILITIES.

We in New Mexico depend as yet almost entirely upon foreign markets for the purchase of all the manufactured articles in use among us. Iron, nails, steel, leather, woolen fabrics, everything indeed, is bought away from home, and transported over the Plains, when *every one of the articles named could be economically manufactured here.* In the present method of furnishing our markets with these supplies, millions of dollars are drained from the Territory which never return, and which go into the pockets of manufacturers in the States. *The elements of manufacturing success* ABOUND IN NEW MEXICO. Our iron ore is uncommonly rich, coal abundant and labor cheap. There is not one article into the fabrication of which iron enters but what could be produced as cheaply in our Territory as it can in any other part of the United States. The same may be said of leather, of which article there is also a large amount consumed annually by our people. Our forests abound with timber which yields a bark of the best quality for tanning purposes. Thousands of hides are yearly thrown away as worthless, though many of late years are exported. With these inducements before them it is strange to say that the people have neglected this branch of business entirely, and have depended on the States to get leather for the most ordinary uses. The wool which our sheep would give for the manufacture of cloth is almost inexhaustible in quantity, and could be bought for a very moderate price. Capital applied to either of these branches of manufacturing could not but produce large incomes to the capitalist, and at the same time give an impetus to the material progress of the Territory that would be astonishing. Our wool was disposed of here in the Territory a few years ago at from nothing up to ten cents per fleece, the owners of the animals being glad to get the wool from the sheep's back without trouble to themselves; this wool was transported across the plains to the States, there manufactured and probably returned here in cloth, clothing and blankets, to be sold with all the costs of transportation, profits, labor, etc., added.

We might give other facts and illustrations—but enough has been said to suggest very clearly that we ought to develope and avail ourselves of the manufacturing materials and facilities we possess. We will here but briefly refer to some of our manufacturing elements and facilities, and not enter into that detail of facts and argument which could be arrayed, and which would make the balance sheet show in dollars and cents the enormous net profits that a judicious system of the culture of the soil, the establishment of manufactories, and increase and improvement of the sheep, horses and cattle of New Mexico, would annually pour into the pockets of our people, and of capitalists who would invest in this way. Manufacturing in the Territory can hardly as yet be said even to be in its infancy; but capital which always for itself searches out its abiding place, will ere long and in due time discover the great west hereaway, and come and grow up with the country.

The Commissioner to survey the route for the Thirty-fifth Parallel Railroad across New Mexico, in his report of the survey says:

"Along the route there are numerous points where water power can be used to great advantage for the manufacture of wool, the stamping and reduction of ores, etc.

"In the cañons of the Arkansas river, by which this stream breaks through the easterly wall of the Rocky Mountains, and obtains an outlet to the great plains, there is an unlimited amount of water power, fully equal to the best in New England, and which will create at these points, especially near Cañon City, very large manufacturing and metal reducing works. The Purgatory and Pecos rivers also furnish, where they *cañon*, admirable positions for water power; and the three cañons of the Rio Grande, between the mouth of the Santa Fé river and the San Luis Park, *can scarcely be surpassed for this purpose.*

"The woolen mill at Kroenig's, near Fort Union, New Mexico, is highly successful.*

"West of the Rio Grande, as well as east, there are numerous smaller cañons in the Rocky Mountains, the Sierra Madre, the Mogoyon range, the Sierra Nevada and Coast range, where, by the construction of dams, a portion of the immense volumes of water which pour down these mountains in the rainy season, and during the melting of the snow, may be economized and applied to running, on a limited scale, grist and saw mills, stamping machinery, etc. The Cañons of the Little Colorado and the Verde, may be used on a much larger scale, while the grand cañon of the Colorado probably presents facilities that are without limit if they can be made available.

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*This manufacturing establishment, the only one in the Territory, has since been destroyed by fire.

"If our line should follow one of the routes suggested, north of Mount Agassiz, it will skirt the falls of the Little Colorado, where this river enters a cañon 100 feet deep and 200 feet wide, affording, it is estimated, from 4,000 to 6,000 horse-power in low water, and suggesting the site for a considerable manufacturing place. There is the greatest abundance and variety of mountain timber adjacent; the altitude is medium, say 4,500 feet above the ocean; the valley above the falls fertile and extensive; the climate exceedingly healthy, and the position otherwise advantageous as being immediately at the base of the highest range on the route. Here may be the great cabinet shop of the plains.

"Manufacturing will also be carried on at various points along or accessible to the line, where *coal* is found abundantly, or in connection with desirable accessories. For instance, on the Arkansas, below the Great Cañon; south of the Raton mountain, near Maxwell's*, near Las Vegas, in New Mexico—if the beds of coal should prove to be thick enough; at the eastern base of the Rocky Mountains, near Anton Chico; *at numerous localities on the Rio Grande*, on the slopes of the Sierra Madre, and most probably on the Great Colorado river. At such points, *in addition to coal, we find attractive positions for settlement*—good land, abundance of water, timber, and a healthful and genial climate.

"Several of these localities appear to offer superior inducements for the manufacture of iron for the many purposes of a mining country, and to supply the wants of the railroad at central points, that will save the burthen of the present lengthy transportation."

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* Now the town of Cimarron.

EDUCATION.

Until recently this important subject has received very little practical encouragement in the Territory. The little advancement it had received was solely through the instrumentality of private enterprise. Before the acquisition of the country by the United States, in 1846, as evidenced by the journals of the provincial and territorial deputations and departmental assembly, respectively, the legislative bodies of the province, the territory and the department of New Mexico, those bodies regularly made provision for the education of the youth of the country in primary education.* They do not appear to have ever established any institution of learning here, or indeed to have contemplated giving any but an elementary education to the youth. The salaries provided for the teachers were small, and those at the capital were paid from the public treasury by appropriation, while in the different jurisdictional *partidos*, into which the country was divided, the prefects thereof were required to see that schools were provided and were maintained by local taxation or from a retained portion of the revenue collected for the general treasury. But since the change of government at that time, and the inauguration of new laws, usages and customs, the state, until within the last three or four years, had ceased in New Mexico to afford any encouragement whatever to the education of the rising generation in the Territory, whose legislatures have allowed one generation at least to grow up without any provision, so far as they are concerned, for its education. The legislature of 1871, however, enacted the existing public school law, which appears to be satisfactory to the friends of education here. Certainly the system of schools and their operation under it, seem to progress well, and the great beneficial results of the law are everywhere manifest.

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* About the first action we are aware of, had legislatively concerning education, was the adoption of a resolution by the provincial deputation, April 27, 1822, at the close of the war for national independence, declaring that it was the duty and the intention of the province to provide ways and means for the education of the youth of New Mexico.

As fully and sufficiently presenting the actual condition of education in the Territory, we subjoin the following official information on the subject from the federal Secretary of State for New Mexico, charged by the territorial statute with the general superintendency of schools therein:—

TERRITORY OF NEW MEXICO.
OFFICE OF THE SECRETARY,
Santa Fé, Dec. 31, 1873.

Hon. JOHN EATON,
Commissioner of Education:

In answer to your inquiries of October 1st, and December 19th, respectively, for "information respecting schools in New Mexico," for your report of 1873, I have the honor to post you the following:

The public school law of New Mexico creates a board of supervisors and directors of public schools for each county, consisting of three persons elected biennially, with the Probate Judge of the county as ex-officio president of the board. "The sole and entire management, supervision and control," is given to this board, "of the public schools within their respective counties;" as also is the "entire and exclusive management and supervision of the school funds of the respective counties, and of the control and expenditure thereof."

THE SCHOOL FUND

consists of 25 per cent. of the entire tax on property, a poll tax of $1.00 on every male citizen above the age of twenty-one years, and any "surplus of more than five hundred dollars in the treasury of any county, after paying the current expenses of such county."

This school law and the provision for the school fund was enacted by the Legislative Assembly of 1871–72, and is probably the most effective law that the friends of education in New Mexico have ever succeeded in placing on the statutes. The greatest practical results at least have followed, and its workings have unquestionably popularized free schools throughout the Territory.

The better to learn the progress of the work under the law, and to give a clear idea respecting the same, on the receipt of your letter in October last, I addressed a circular letter and blank to presidents of school boards, teachers and educational men throughout the Territory, asking for certain statistics therein indicated. Most of these persons have answered, and with a commendable interest. Much delay has been unavoidably incurred by reason of the entire absence of any system for obtaining the information sought. I give you the following aggregated statement of the schools in this Territory.

SCHOOLS.	Number of Schools.	Pupils.	Teachers.	Average No. of months taught.	Average of wages of teachers.	Languages taught.*	FUNDS.
Public Schools supported by taxation.......	133	5625	136	6¼	$28 69	10 E. 111 S. 12 E. S	$29,721 57
Private Schools	26	1370	53	9		7 E. 19 E. S	27,100 00
Pueblo Schools	5	107	7	6		E.	4,000 00
	164	7102	196	....	....	....	$60,821 57
Census returns 1870—public and private schools.........	44	1798	72				29,886 00
Increase for '73	120	5304	134	....	....	....	$30,935 57

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* E stands for English and S for Spanish.

Right here allow me to digress for a word, and call the attention of those who within the past year or two have seemed to delight in

MISREPRESENTING THE EDUCATIONAL INTERESTS

of New Mexico through the public press outside of the Territory, both east and west, and otherwise, by asserting with a recklessness for truth astonishing to relate, that either there are no schools whatever in the Territory, or, at most, a number expressed by a unit of medium value. I would respectfully refer those making these erroneous statements to the census report of 1870, table XII, of New Mexico, vol. 1, and to the report of the Commissioner of Education for 1873, where will be found the statement above set forth for 1870, of public schools.

We glean the following items from the mass of local reports at hand. There is taught in all the schools reading, writing, and arithmetic, grammar in 41, geography in 34, and history in 17; a few also teach other of the higher branches. The county of San Miguel reports two public school houses worth $)824.43. In Silver City, Grant county,

THE LADIES HAVE FORMED AN EDUCATIONAL SOCIETY,

have raised a fund of $1,400, and express a determination to increase it to $2,500. They have also adopted plans for a brick school house, 20x40 feet on the ground, and we doubt not that they will carry the enterprise to completion. God bless the ladies! A subscription is also out in Lincoln for the same noble purpose.

Doubtless there are other enterprises of a similar character in other enterprising towns, of which mention has not been made. In very many districts the use of a school room is donated; in others, rented for a moderate sum. In Doña Ana and Grant counties the supervisors of public schools donate their per diem allowed by law to the school fund.

THE SCHOOL BOOKS

used, are legion in variety, and run from a sectarian catechism to Ollendorf's method. School books are very generally bought for the indigent. So deep is the interest in some of the counties, that the local school boards have made inquiries of the territorial officers, if there was not a law or some means by which the attendance of children could be enforced. One county reports that boys only are admitted to the schools. Four public schools reported, are combined with parochial or mission schools. Taking the usual percentage of children relative to the agregate population, and there are 22,969 children in New Mexico of school age. Deduct the number reported attending both the public and private schools, and we find still in the Territory

15,974 CHILDREN ABSENTEES,

in most cases doubtless without the opportunity of attending school. Of private schools, five are convents under the control and management of the "Sisters of Loretto" with an attendance of 546 pupils, 120 of whom are poor. To them tuition is free. They have 21 teachers, and an income of $12,000. Next are the schools under the control and management of the "Christian

Brothers" (Catholic), of which there are three; two of these schools have an attendance of 180 pupils, 10 teachers, and an income of $5,450.

There is also a Jesuit school at Alburquerque. There are two Presbyterian Mission schools reported, with an attendance of 80 pupils and three teachers. Tuition generally free. There is also one Methodist Episcopal Mission school, with an attendance of 80 pupils, two teachers, and an income of $700.

The above schools, as also others of the private schools, teach both the common and higher English and Spanish branches, and will doubtless prove of great value in educating teachers. Some of them, we have reason to believe, are model schools.

PUEBLO INDIAN SCHOOLS.

We learn from the Pueblo Agent, that two of these schools are under the Presbyterian Board of Missions, but that they are not managed in a spirit of sectarianism, that a growing interest is manifest, and that they are open to all who apply. Twelve hundred dollars of the fund is contributed by the Presbyterian Board, and $2,800, by the general government.

THE MANIFEST NEED

among the public schools at this time is a uniform system throughout the Territory,—something in the nature of a central board of commissioners composed of practical educators, who feel a pride in the work, with authority to establish some simple general plan, embodied in printed form for the government of schools.

The necessity for such board is intensified, for the reason that the masses of the people are entirely unused to the advanced systems of free schools of the present day and age; and with few honorable exceptions are also unacquainted with the management of public schools in any form. There is scarcely less need for public school buildings.

There is also a want of uniform school books in individual schools, and also of competent teachers, both in English and Spanish. Some standard of qualification among teachers should be adopted, and to that end an examining officer or a board of examiners is an absolute necessity. It should also be their duty to visit and examine the schools at stated times.

THE LEGISLATIVE ASSEMBLY,

now in session, shows a commendable interest in behalf of progress; indeed, we may say, are unanimously in favor of further legislation to that end.

A joint committee has been appointed, having for its object a revision of the assessment and tax laws, the improvement of the school system, so as to admit a more general availability of its advantages, and an increase of the school fund. It is confidently expected that minor differences about details will be harmonized, and healthy progress be the result.

OF THE PEOPLE,

it is simple justice to say, that as a class they are kind, hospitable, industrious, tractable, and law abiding; and in point of morals and integrity, they will compare favorably with very many who have enjoyed much greater advantages in life. They pay their taxes as promptly and as fully as any people in the land; and submit as cheerfully when they are satisfied that a substantial public good is to be the result.

It is well to bear in mind the entirely anomalous condition of the people and Territory, when compared with any other state or territory in the Union, and that the power has not in all cases been vouchsafed to human wisdom to eradicate the abuses of years in a day. New Mexico, before its acquisition by the United States, had been

UTTERLY NEGLECTED FOR GENERATIONS

by the government of old Mexico, in all things appertaining to its material prosperity and social advancement; and that the people were only cognizant of a superior power, as indicated in the presence of exacting revenue officers, or the recruiting sergeants, incident to the chaotic and turbulent state of a government beset with revolutions and counter-revolutions, which in effect were, of course, most paralyzing to productive industries, exhausting to accumulated resources, and which made even existence itself problematic. In those times, self-preservation, the first law of nature, became the chief thought in the family circle, and the main business of life with each family. There was no time, opportunity or impulse for social or intellectual improvement, nor had there been for generations. Such, in brief, was the condition in which the government found the people at the time the Territory became part of the Republic. They were, and likewise continued to be for a long time,

BESET ON ALL SIDES

by hostile and nomadic Indian tribes, embodiments of all the villainies incident to unregenerate man, and also with not a few of the outlaws, a hair-brained, and graceless set, ever present on the frontier of an advancing American civilization. Scarce had the government, through the civil and military authorities, made an impression toward bringing order out of chaos, when

FOLLOWED THE REBELLION,

threatening the integrity and life of the nation; during which event, be it said to the credit of the people of New Mexico, they remained true to the flag, and cheerfully

CONTRIBUTED THEIR QUOTA OF PATRIOTIC CITIZENS

towards the defense of her soil and the suppression of the rebellion. This event, of course, still further kept education and progress in abeyance.

Under the protection which they have enjoyed from the government, more particularly for the past few years, and the freedom from oppression of the old government, and the resultant prosperity, they are coming to think of those matters calculated to better their condition in life, and not the least of these is education.

New Mexico has, we submit,

MADE A COMMENDABLE START

in educational interests. It will never be less; but, to the contrary, is destined to develope and grow with accelerating progression, ever onward with the approach and advent of railroads and telegraphs, and the consequent development of its material resources, its rich and varied mining deposits, its extensive agricultural, pastoral, and lumber interests, and the manufactories, intelligent immigration, and general accessories that hand in hand naturally accompany, and which go to make the sum of the advancing elements of a

HIGHER CIVILIZATION,

in store for the near future of New Mexico.

Very Respectfully,
W. G. Ritch,
Secretary of New Mexico.

RAILROADS.

There is as yet not a mile of railway constructed in New Mexico, though various important roads are pointing this way, and are in course of construction. The roads being now constructed are the—

Atlantic and Pacific, or 35th Parallel ;
Texas Pacific, or 32d Parallel ;
Denver and Rio Grande Narrow Guage ;
Atchison, Topeka and Santa Fé.

Several others are projected, and charters and rights of way have been obtained, the two principal ones being the New Mexico and Gulf, and the Arkansas Valley and Cimarron, though we believe the right of way over the public lands conceded by Congress to the former has terminated, owing to non-compliance with its conditions. The Arkansas Valley and Cimarron road proposes, we believe, connecting with the Atchison, Topeka and Santa Fé road, starting from some point in the valley of the Arkansas river,* the line bearing thence in a southwesterly direction, first to the head waters of the Dry Cimarron.

The necessity and importance of the early construction and operation of railroads in New Mexico are constantly becoming more and more manifest; and the prospect of one or more of them reaching and of at least one of them traversing the Territory in the early future, and thereby connecting us with "the rest of mankind," is rapidly brightening. The United States Surveyor General a few years ago officially estimated that including the wagons used for government transportation, there were used for freighting from the States to New Mexico during the year, three thousand wagons; that the average burden of each was five thousand pounds, equal in the aggregate to fifteen million pounds of freight; that the value of goods imported from the States amounted to three millions of dollars, of which two hundred thousand dollars in value was exported into Mexico; that there was imported from Mexico goods, dried fruit, &c., to the value of seventy-five thousand dollars; and that 750,000 pounds of wool, valued at one hundred and fifty thousand dollars, was exported to the States; an estimate of the value of the various other articles and items of domestic trade not being attempted.

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* The Rio Napeste of the Mexicans.

The Texas Pacific or 32d Parallel road, says United States Surveyor General Proudfit in his last annual report, is being rapidly pushed towards us in New Mexico from both Texas and California, and under the able management of the distinguished railroad men and capitalists who now control it, there is no doubt of its early completion. This road will enter the Territory near Paso del Norte, or Franklin, on the Rio Grande, in all probability, and continue northwesterly to the western boundary of the Territory.

The Atlantic and Pacific, or 35th Parallel road, does not seem to be pushed with equal energy, but it has a fine line, running nearly centrally through the Territory, east and west, with easy grades, through fine grazing and irrigable lands, entirely below the line where snows are troublesome. It and the Texas Pacific possess the two best lines yet projected for transcontinental railways, and no better can be found. It also possesses, as does the Texas Pacific, a magnificent land grant in this Territory. These lands will become immensely valuable as the roads progress through them. The Atlantic and Pacific road is of much greater importance to the Territory than the more northern line on account of its more central and commanding route; and, if built to the Pacific, it would beyond all question speedily become an exceedingly popular and profitable road.

The Atchison, Topeka and Santa Fé road, with its present terminus at Granada, Colorado, is being rapidly built westward, and it is confidently expected it will be completed to Cimarron in this Territory, about one hundred and fifty miles northeast from Santa Fé, within the next twelve months. Its ultimate ambition is doubtless to reach the Pacific ocean, or the Mexican capital. It has no land grant west of Kansas, but is more deserving in this respect than some corporations which having large grants do not use them for the benefit of the public by building the roads promised when the grants were made.

The Denver and Rio Grande narrow-guage road, now running to Pueblo, Colorado, with a branch to Cañon City, has thrown out its grading parties of late fifty or seventy-five miles towards our Territory; and we have the strongest assurances that it means to come down the valley of the Rio Grande, which it will probably enter by way of Sangre de Cristo Pass.

This north and south line will be of great benefit to the Territory when completed.

Taken all in all the prospects of this Territory, as regards railroad communication, may be considered as very flattering; and with their advance a new era will dawn upon New Mexico. And with *her admirable climate, her mineral resources, her boundless pastures, her fruitful valleys, magnificent and sublime scenery and health-giving mineral waters,* she will draw to her borders all sorts and conditions of men, who will build up a commonwealth which will be an honor to the great nation of which she will form a part.

One of the most practically successful railway enterprises of those we have named, is the Denver and Rio Grande. Its western terminus is now at Pueblo, in Colorado, and to that point it is doing an immense freight business. With a capacity of 200 freight cars and 10 locomotives, the wants of the shippers along its line could not be supplied. There are eighty cars ordered and two new locomotives, to be supplied in the month of December. The company are now erecting a brick round house at Denver, and making many improvements along the line of their road. This narrow guage road will penetrate, says one of the Pueblo journals, one of the richest mineral bearing districts, as well as the great pastoral country of New Mexico. Southern Colorado is greatly benefitted and developed by this road. The projectors and owners of this road should meet with perfect success, for it is an enterprise that required energy and pluck to place it in a prosperous position.

The Arkansas Valley and Cimarron road, in the first portion of its route to the headwaters of the Dry Cimarron, will traverse a section, which, while of comparatively small value for farming purposes, is nevertheless not without considerable value on account of its great advantages as a grazing district. As evidence of this, for a number of years past almost countless herds have been kept in this district, winter and summer, with the best of success. Leaving this section of country, and continuing soutwestwardly, the line crosses the Dry Cimarron, in a beautiful valley, much of which is already settled, in anticipation of the time when the advent of the locomotive will place them in closer communication with the outside world. Thence continuing the same course, it passes for a few miles through the most magnificent scenery that one could imagine or desire. From Capulin mountain, proceeding westwardly, the line begins to descend by the Tinaja, a small stream, to the Canadian valley, and thence direct across a beautiful plain, well watered by the Canadian, the Vermejo, the Poñil and the Cimarron, to the town of Cimarron in Colfax county. The route of the road has been surveyed, we believe, as far as Cimarron, and although the location surveys have not as yet been prosecuted west of that point, a series of examination reconnoisances have been made, extending westward through the Spanish range, to the valley of the Rio Grande, which, while demonstrating that no less than three available railway passes existed within fifty miles of Cimarron, that one—the Taos pass—was eminently practical. To reach this pass a line with comparatively light work and easy grades is found running directly from Cimarron up the valley and cañon of the Cimarron river to the Moreno valley, thence keeping up the valley to the summit, across and down Taos creek to the city of Taos, making a distance from Cimarron to Taos of only about fifty miles, and by far the cheapest and best crossing of the mountains between Alburquerque, Santa Fé and the Black Hills, and at the same time *passing the entire distance through a country that will afford an immense local traffic.* Not only this, but reaching the Rio Grande valley, it at once opens up the immense area of agricultural, mineral and pastoral country to the westward. Another route is proposed from Cimarron, via Las Vegas, an enterprising town, the county seat of San Miguel county, and thence to the Rio Grande by way of Anton Chico, or the Galisteo creek.

We may mention another proposed New Mexico railway, which if constructed, would doubtless be a very useful and popular road—we mean upon a route from the Arkansas river, connecting with the Atchison, Topeka and Santa Fé road, and also with the Kansas Pacific, and running from the Colorado line through Mora county, and thence due west into Rio Arriba county to the Rio Grande, and down that river to Santa Fé, thence to Alburquerque, making a junction with the Atlantic and Pacific Railroad, and then down the Rio Grande, parallel with the river to El Paso, Mexico, and connecting with the Texas Pacific road, in southern New Mexico. This is a superior route to connect Denver and Santa Fé with the east, and to construct railways to the Pacific and Gulf of Mexico, because the mountain elevations of the country admit of their being built at the least possible expense, because it traverses a country exceedingly rich in minerals which would, immediately upon their being built, make them self supporting; and principally because the route presents *no solitary obstacle throughout the mountain portion of the country in preventing its operation with the same facility in winter as in summer.* The construction of a road on this route would benefit the government in bringing the public domain through which it would pass into market, in the settlement of the Indian troubles in Colorado, New Mexico and Arizona, and the opening of mineral, agriculturaland pastoral lands, on which thousands of families could obtain happy homes, all of which would save and produce more annually than the whole cost of the road.

In the case of railroads, it is not alone the resources of the country immediately traversed that contribute to the trade of the road, but those of districts even somewhat remote from the line, which will be immediately rendered greatly more accessible than at present, and will gradually be put into *direct* communication by branches. Thus, as a legitimate and certain effect of the construction of the trunk line, private capital will hasten to use various points along the route each as a new base from which to strike, in order to tap new and distinct sources of wealth and trade. Thus, when the 35th parallel road for instance, is made, almost immediately a branch will be constructed from Cheyenne Wells to Denver, reaching by the shortest practicable route the gold and silver mines of the Clear Creek region—the farthest north of any discovered mineral wealth in Colorado—and the coal, iron ore, and manufacturing facilities at Golden City and Boulder; and another branch will, at an early day, be extended up the easy grade—less than 20 feet per mile—of the Arkansas valley, to the coal, timber and iron ore at the base of the Rocky Mountains, to the unexampled manufacturing facilities at the Big Cañon, to the mines of gold and silver, and the arable parks and valleys, and the unrivaled pastures of southern Colorado, and to that most promising reservoir of the precious metals near the head of the Arkansas, and in the South Park. As mining developments advance, this line will be pushed on westward over the great continental divide at Arkansas Pass (which can be crossed with a grade of 75 feet per mile), to the waters of Grand

River, and so on eventually through western Colorado into Utah. A southward prong of this line will be extended from the Arkansas, across Punche Pass to the San Luis Park, traversing that beautiful basin for its whole length, and opening up an extensive mining region in the Spanish Range, on the east, and the San Juan mountains on the west. This line, by gradual extension southward along the Rio Grande, tapping the Abiquin and Jemez copper mines en route, will finally again intersect the trunk road near Alburquerque—the whole route being through a country of good resources, and, except in crossing the Punche Pass, the grade nowhere exceeding 20 feet per mile. A third branch will soon be constructed from Alburquerque down the valley of the Rio Grande, 250 miles to El Paso, traversing all the way, by a grade from 5 to 10 feet per mile, *a broad, productive valley and vineyard, where enough good wine can be raised to supply the United States;* and opening up the mines of argentiferous galena and copper in the Organ range, which encloses the valley on the east for the whole distance, and of gold and silver and copper in the Ladrones, Socorro, San Mateo and Mimbres mountains on the west; the coal near Fort Craig, and the extraordinary rich deposits of copper and gold at Pinos Altos and Silver City, with the agricultural wealth of the Mesilla valley. This branch will be extended from El Paso, 200 miles more across a gentle mesa to the City of Chihuahua, the capital of the rich northern states of Mexico, which have produced an amount of gold and silver, compared with which the production of California and all our mineral states and territories is as yet but a trifle; where in a single small mining district, that of "Santa Eulalia," more than 200 mines were formerly worked in a space of two square leagues, 50 of them to a depth of 600 feet, and where a census, taken in 1833, showed that $430,000,000 had, up to that time, been taken from the mines in this *single limited district*. But, although the population of the city of Chihuahua, adjoining Santa Eulalia, then 76,000, has dwindled to 12,000, and very few of the mines are now, by reason of bad government, and its result—insecurity from the Indians, worked at all, yet great wealth is still there to reward those who are to extract it under the new and stimulating influences of railroad communication. This Chihuahua branch may be extended to Durango, and eventually to the city of Mexico, opening up a trade with 7,000,000 of our neighbors, from the best direction to benefit the people of the United States. This is in many respects perhaps the most important branch of all, and the rich traffic that it promises will induce its construction promptly after the main line reaches the Rio Grande in New Mexico. The supplies of Chihuahua, Durango, Zacatecas, and other Mexican states which are cut off from the ocean by high mountain barriers, are now wagoned from the coast in Texas, and *were formerly wagoned from Missouri.* This trade will be at once *restored to its ancient channel, and vastly enlarged*, when the track reaches Alburquerque. The people of Chicago and St. Louis, and of the cities of the Mississippi valley south of the latter, will then be found competing for the supply of clothing, machinery, groceries, etc., to the Mexican states, as they now are to the miners and rancheros of Colorado, Montana and New Mexico. The silent but certain political effect of this influence is not less notable than the stimulus to trade. The ores of Silver City and Pinos Altos, west of the Rio Grande, in southern New Mexico, are very rich, and now pay for wagoning supplies over 900 miles from the Gulf of Mexico at Indianola. What a development will be seen in such a region with the railroad finished to Alburquerque, or better still, with the Rio Grande branch constructed, and the Apaches *fully* disposed of. In western New Mexico branches will be constructed from the 35th parallel northwestward and southeastward along the slopes of the Sierra Madre.

The transcontinental road or roads, destined sooner or later to traverse this Territory, will be the great instrumentalities of our greatness and our glory. They will be the popular vehicle of a very large proportion of that commerce between the two worlds, now carried on across the Isthmus, over the seas, and over the Union Pacific railroad. But aside from all this, and aside from our own exports and imports, the local traffic will be very considerable and important, and will occasion tap railways everywhere, and network the Territory with them—for there will have to be transported, of our own products and in our own commerce and business, ores in large quantities to favorable local points, where they may be reduced by water power or steam, and the products of rich placer mines from dry localities to water; wood and coal to the mines, reduction works and ranchos; timber, lumber, iron, building material, etc., to the mines and mills; and, when the native manufacturing resources are utilized, clothing, pottery, blankets, and so forth; breadstuffs, vegetables and fruits from the valleys to the mines and tablelands; passenger travel, the United States mails, live stock from the pastoral uplands to the grain growing valleys and the mining districts; volcanic ash and tufa for manures; gypsum for the same and for plaster; marble, serpentine, granite, and other like material; mescal and pulque—and innumerable other articles and materials which enter into the list of necessities or luxuries of American life, and a great many new products peculiar to the combination of latitude and elevation.

PUBLIC LAND.

The United States surveyor general for New Mexico, James K. Proudfit, states that at this time there are, within the area of 121,201 square miles in the Territory, embracing in acres 77,568,640

Military reserves surveyed	189,485	
Indian reserves surveyed	1,752,960	
Private grants surveyed	4,377,750	
Mines and town sites surveyed	705	
Townships subdivided	4,839,480	
		11,160,380
Leaving acres unsurveyed		66,408,260

Of the nearly five millions of acres of surveyed lands in the Territory indicated by "townships subdivided," but about one and a-half millions have ever been placed in the market for sale. This has been done in a single instance, which was the sale of August, ordered by the proclamation of the President, of May, 1870—the lands then proclaimed being those lands selected for sale by the General Land Office, without any prior consultation with the local land officers for ascertaining in which of the surveyed sections of the country lands were most in demand—whence it resulted, of course, that much of the land offered in the sections so selected, was not only not in demand, but was not public land at all, and, consequently, but little of it—about 33,000 acres—has been sold. We are indebted to Captain A. G. Hoyt, register of the United States land office at Santa Fé, for a memorandum statement of the localities, and amounts in acres of the lands thus placed in the market, and of the lands taken up by entry and purchase, in the several counties of the Territory.

LANDS OFFERED.

In Mora county—on the Mora river, southeast and near Fort Union	23,040
In Rio Arriba county—on the Valles mountain, near Baca location No. 1	4,100
In Santa Ana county—on the Valles mountain, near Baca location No. 1	50,000
In Santa Fé county—in the southern half	407,880
In San Miguel county—45,410 acres near Baca location No. 2, on the Rio Colorado, 454,915 on the Rio Colorado and Rio de las Conchas, and 92,475 on the Rio Pecos, embracing the towns of Puerto de Luna and Agua Negra	592,800
In Socorro county—on the east side of the Rio Grande	229,790
In Lincoln county—south-east of Fort Stanton, on the Rio Bonito, Rio Ruidoso and Rio Hondo	323,125
Offered lands in Territory	1,630,735

LANDS TAKEN UP BY ENTRY AND PURCHASE.

In Mora county, acres	2,000
In Santa Fé county	7,000
In San Miguel county	22,000
In Lincoln county	18,000
In Colfax county	2,500
In Doña Ana county	500
In Grant county	1,000
In Valencia county	5,000
Total acres	58,000

Two railroads—the thirty-second parallel, or Texas Pacific, and the thirty-fifth parallel, or Atlantic and Pacific—have each a land subsidy in New Mexico, the great body of the land along the surveyed route, in each case, lying outside of the portions of the Territory now surveyed. The first mentioned road has in its grant in New Mexico about 10,000,000, and the other about 3,500,000 acres of land, the odd sections of the townships in the surveyed regions being already withdrawn by the secretary of the interior from entry and sale, and the even sections declared subject to the laws applicable to the public lands within railroad grants. The government is bound under the laws chartering the roads to survey and subdivide the regions embraced by the subsidies, so as to enable the companies to make available their landed interests.

Of the area of the public lands in the Territory yet unsurveyed, and, of course, unoffered and not disposed of, at least one-tenth is susceptible of cultivation, and it is capable of sustaining an extremely large agricultural, pastoral and mining population, the actual amount of cultivable land in the valleys being very fertile and productive. The table-lands and plains are inexhaustible in pasturage, and in the mountains are treasures of vast stores of mineral wealth. It embraces a country, much of which is *terra incognita*, it having been but very partially explored, and, so far as metals are concerned, scarcely at all prospected.

"Of this vast area (of 121,201 square miles, or 77,568,640 acres in New Mexico) the Spanish and Mexican grants, which will be found to be valid, it is confidently believed," says Surveyer General Proudfit, "will not exceed, including those surveyed, an aggregate of more than 9,000,000 or 10,000,000 acres, or approximately one-eight of the total territorial area. A very large portion of the unsurveyed and unclaimed public domain of the Territory is fine agricultural, grazing and timber lands, all of which are increasing in value and desirability as the prospect of the railroad communication with the States becomes more certain of fulfillment in the near future. Two of the roads which, it is hoped, will soon reach the Territory, and one of which—the Texas Pacific—is being pushed with great vigor, have large land grants in this district, and will expect, as will settlers, a survey of the lands along their lines. Heretofore, and for various reasons, but principally because the Territory and its people have been persistently misrepresented and misunderstood, but small appropriations have been made for public surveys. A good deal of the ignorance in regard to this region has been propagated by interested parties intentionally, and a good deal of it by those who were uninformed and did not seek to learn, and what has given the bad impression of the Territory a great deal of its weight is the fact that among the latter class were certain government officials whose business it was to learn the truth, and state facts. During my residence in the Territory, my travels have amounted to more than one thousand miles in different parts thereof. I have done this traveling mainly that I might learn by actual observation the nature and capabilities of the country, and the characteristics of the people. I know that *the Territory is well deserving* of more liberal treatment than it has received from congress, and that, as a matter of business management purely, the public surveys ought to be rapidly prosecuted hereafter."

PRIVATE LAND CLAIMS.

The subject of Spanish and Mexican land grants in New Mexico is one of great importance to the welfare and progress of the Territory, and especially so with respect to its settling up by immigration. These grants have been issuing from the authorities here, to the subjects and citizens of the country since its first settlement by the Spaniards, and during the whole period of its occupation by them and the Mexicans. Soon after the Spanish arms in the sixteenth century penetrated and occupied New Mexico as one of the ultramarine possessions of the crown of Spain, the governors and captains general of the province—then pertaining to the viceroyalty of Mexico—were authorized and empowered to make concessions of land to the settlers. Afterwards they were made to individuals for distinguished loyalty to the crown and important services to the state in the Indian wars then harrassing the people and impeding the development and progress of the country, and still subsequently these concessions were made in numerous instances to the descendants of those persons who had thus manifested their loyalty and contributed their services. During the Spanish regime in New Mexico, as elsewhere in the Mexican viceroyalty, it was always the declared policy of the sovereign *that the public domain should be populated and utilized* through the mediun of grants of land to his subjects, as individuals or as communities. Afterwards, when the Mexican republic succeeded to the sovereignty of the soil, it was the declared policy of that government to *encourage agriculture* by making to its citizens and to communities liberal donations of the national domain for cultivation and stock raising and also for mining purposes.

It is said by those who ought to know, that there are very few, if any, spurious grants in the Territory—certainly very few compared with the number brought to light in California. Some of these grants of land are now held by our citizens, other grants by large and flourishing communities, and others have been purchased by capitalists and wealthy companies with a view to their settlement and application to agricultural, stock growing and mining uses.

Now that predatory incursions of the wild Indians have, under the policy of the present national administration, become less frequent and serious, and now that the advent of railroads is foreseen in the near future, settlers are beginning to search out and locate homesteads on the public domain beyond the frontier, under the government of the United States, and on private grants by purchase.

The only provision hitherto made by the Congress of the United States, which alone, under the constitution, has the primary dominion and control of the soil, for the ascertainment and settlement of private land claims in New Mexico, emanating from the former governments of the country, is the statute of July 22, 1854, establishing the office of Surveyor General, and authorizing and requiring that officer to hear and adjudicate all such claims presented to him for the purpose, and report them, with his opinion thereon, *pro* or *con*, for the final determination —the confirmation or rejection—of Congress. The following extract from the law referred to, prescribes the powers and duties of the Surveyor-General in the premises :—

"SEC. 8. And be it further enacted, that it shall be the duty of the Surveyor-General, under such instructions as may be given by the Secretary of the Interior, to ascertain the origin, nature, character and extent of all claims to lands under the laws, usages and customs of Spain and Mexico, and for this purpose may issue notices, summon witnesses, administer oaths, and do and perform all other necessary acts in the premises. He shall make a full report upon all such claims as originated before the cession of the Territory to the United States by the treaty of Guadaloupe Hidalgo of 1848, denoting the various grades of title, with his decision as to the validity or invalidity of each of the same under the laws, usages and customs of the country before its cession to the United States, and shall also make a report in regard to all the pueblos existing in the Territory, showing the extent and locality of each, stating the number of inhabitants in the said pueblos respectively, and the nature of their titles to the lands, such report to be made according to the form which may be prescribed by the Secretary of the Interior, which report shall be laid before Congress for such action thereon as may be deemed just and proper, with a view to confirm *bona fide* grants and give full effect to the treaty of 1848 between the United States and Mexico; and until the final action of Congress on such claims, all lands shall be reserved from sale or other disposal by the government, and shall not be subject to the donations granted by the previous provisions of this Act."

The treaty of Guadaloupe Hidaigo, referred to in, and which gave occasion for the enactment of the foregoing section, stipulates and provides in its eighth article that: "Mexicans now established in territories previously belonging to Mexico, and which remain for the future within the limits of the United States, as defined by the present treaty, shall be free to continue where they now reside, or to remove at any time to the Mexican Republic, retaining the property which they possess in the said territories, or disposing thereof and removing the proceeds wherever they please, without their being subjected on this account to any contribution, tax or charge whatever. * * In the said territories property of every kind now belonging to Mexicans not established there, shall be inviolably respected. The present owners, the heirs of these, and all Mexicans who may hereafter acquire said property by contract, shall enjoy with respect to it guaranties equally ample as if the same belonged to citizens of the United States."

And the treaty with Mexico of December 30, 1853, commonly known as the Mesilla valley treaty, or Gadsden purchase, in its fifth article stipulates and provides that: "All the provisions of the eighth * * articles of the treaty of Guadaloupe Hidalgo shall apply to the territory ceded by the Mexican Republic in the first article of the present treaty, and to all the rights of persons and property, both civil and ecclesiastical, within the same, as fully and effectually as if the said articles were herein again recited and set forth."

The law of Congress of August 4, 1854, extended the federal and territorial civil jurisdiction over the additional territory acquired by the treaty of 1853, whereby the statute whose eighth section we have quoted, became operative also over the Gadsden purchase.

The law quoted, it is observed, prescribes no term within which the claims for lands under concessions emanating from the former governments shall be filed for adjudication: it is entirely *optional with the claimants to present or decline to present their claims*—and it is no doubt due mainly to this omission that comparatively so few have been filed and determined. The surveyors general have several times recommended that a date be fixed by Congress, on or before which time all these claims shall be filed, else be forever barred from recognition and confirmation; and the present surveyor general proposes July 4, 1876, for such prescribed date. The propriety and expediency, and indeed the necessity of fixing some limit to the time wherein these grant claimants shall make their titles known to the government, and to the people interested in knowing which is public domain and which is not, are too manifest to admit of question, and too urgent to admit of delay. Congress of course might in its discretion extend the term. When once established, however, we think the effect would be to cause nearly or quite all the claims to be brought forward and filed, leaving little reason for an extension of the filing term.

Under the law, as it stands, about one hundred and fifty claims—exclusive of Pueblo grants—have been filed with the surveyor general. Of these some ninety have received his favorable, and several his unfavorable action, and been reported to congress; and of those reported, congress has by law confirmed about one half, has rejected one, has restricted two to smaller area, and has most of the remainder now—May, 1874—pending before it in a bill for their confirmation. Of the confirmed claims about twenty have been surveyed and two patented,* the surveys all being executed by the government, and, in most instances, at its expense. Since 1862 congress has required that the surveys, when made, be executed by authority of the government, but at the cost and expense of the grant owner—which latter requirement we think is a palpable violation of the spirit and intent, and indeed of the letter of the "contribution, tax or charge" clause of article VIII of the treaty of Guadaloupe Hidalgo, before quoted, and it has certainly had the effect of preventing the survey and segregation from the public domain of numerous confirmed grants in this Territory, and in the ascertaining and fixing of whose locus and area the government, which is necessarily ignorant of both, is at least as much interested as the land owner himself, who, of course, knows where his tract is, and which are its boundaries, and what its extent.

The Indian "pueblo grant" claims constitute a series of claims distinct from that of the "private claims." They are community grants, designated at the surveyor general's office as A, B, C, etc., down to T, inclusive, and have all been reported and confirmed, and many of them been surveyed and, in 1864, patented by the government.

In neither class of claims has any fraudulent one been detected and exposed; and, indeed, very few spurious claims, if any at all, are believed to exist in the Territory—the low value of lands here up to this time being an insufficient incentive to the fabrication of spurious muniments; though, as our lands, with the advent of railroads, capital and immigration, increase in value, the incentive to their fabrication will correspondingly augment, and it may be that New Mexico will then rival California in the production of fraudulent land grants. For, as Surveyor General Proudfit remarks, "it is becoming known that the country enjoys a magnificent climate, that all its valleys are well adapted to a variety of crops, and that its mesas or tablelands are the finest stock-grazing regions in the world. Stock feeds the year round upon the grama and other nutritious grasses; and the winters are so mild and equable, and comparatively stormless, that stock needs little or no care, except herding, to prevent straying or other loss. In view of these and other considerations, there is a large and increasing call for public surveys, very many preferring to obtain their land direct from the government, instead of attempting to purchase in small quantities from grant owners. The impression which has prevailed in official circles at Washington that all, or nearly all, the Territory that is of any value was claimed under or covered by grants, is erroneous and without foundation in fact."

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* Recently the General Land Office declined to patent surveyed confirmed private land claims in New Mexico, on the ground that the grant itself was the equivalent of a United States patent. But on appeal to the secretary of the Interior, and reference of the question by him to the attorney general, the ruling was reversed, and patents will issue to the owners of all such claims.

In the adjudication of land titles in New Mexico held under concession from either of the former governments, the stipulations and the principles of the treaty of Guadaloupe Hidalgo, the model international compact of the age, with respect to landed property having a status at its date, enter and largely govern in their determination. Our government in deciding upon the validity of these grants always appears to have been actuated by the most liberal principles, as evidenced both in the legislation of congress and in the decisions of the supreme court concerning them. If the grants were incipient and inchoate at the date of the change of national sovereignty under the treaty of Guadaloupe Hidalgo, or *if acquired in good faith, though imperfect in form, or defective in requisites not absolutely essential*, they are recognized and confirmed. The claimant therefore under one of these old grants, *though he hold in good faith but the color of title*, may rely with confidence upon the government for an equitable and generous consideration of his claim.

As showing the large authority and powers exercised in New Mexico by the governors and captains general under the vice-royalty, and by the governors and political chiefs under the subsequent different governments of Mexico in the disposal of the royal and national domain, then almost absolutely useless and without value, in this distant section of Mexico (the boundaries and limits of the tracts granted being often described simply as from mountain to mountain, and from river to river), we here insert extracts from two decisions of the United States surveyor general for New Mexico, made upon private land claims Nos. 4 and 17, adjudicated by him in 1856 and 1857, and both of which—each for at least a million acre tract—were approved by him. We believe it is a settled principle that the official acts of an officer are the acts of his government, under whose laws he officiates, and hold good until duly annulled. And if the principle in international law that a person exercising public authority represents *pro tanto* his government, which is but the embodiment in an international sense of all the employés and persons exercising that authority, be the correct and binding principle, then the facts stated by the surveyor general in the extracts mentioned become an important consideration in connection with the adjudication of our large land grants, since these are to be dealt with not under the provisions of our national constitution and laws, but under the stipulations and guaranties of that "higher law," the treaty.

"At the period (1843) when this grant was made, the province of New Mexico had just emerged from a series of revolutions and civil commotions which had caused the general government of the republic to confer upon the governor of the province extraordinary and almost absolute power in all things relating to the domestic affairs and internal government of the province. Under this authority and the extraordinary powers so vested in him this grant is purported to have been made."

"The supreme authorities of the remote provinces of New Spain—afterwards the republic of Mexico—exercised from time immemorial certain prerogatives and powers which, although not positively sanctioned by congressional enactments, were universally conceded by the Spanish and Mexican governments; and there being no evidence that these prerogatives and powers were revoked or repealed, by the supreme authorities, it is to be presumed that the exercise of them was lawful. The subordinate authorities of the provinces implicity obeyed these orders of the governors, which were continued for so long a period, until they became the universal custom or unwritten law of the land wherein they did not conflict with any subsequent congressional enactment. Such is the principle sanctioned by the Supreme court of the United States, as expressed in the case of Fremont versus the United States (17 Howard, page 542), which decision now governs all cases of a similar nature."

In concluding our chapter upon private land claims in New Mexico, we present the following article, written at our request by Judge Joab Houghton, of Santa Fé, who has resided in the Territory for more than thirty years, and who during that time has held here the offices of United States vice-consul and commercial agent in 1844 (before the conquest), chief justice of the provincial territorial government in 1846, register of the United States land office in 1861, and associate justice of the supreme court of New Mexico in 1865, and who is now one of the leading practicing lawyers of the Territory:—

The people of New Mexico have just ground for complaint, not only on account of the course of procedure adopted by the administrative officers of the Land Department of the government respecting their grants of land derived from their former government, the Republic of Mexico, but also the evidently erroneous, if not unconstitutional legislation of Congress in assuming to cut down and curtail the area and extent of these grants in several instances to less amount and extent than that ceded by the government of Mexico, and in which they have been placed in judicial possession by the legal officers of that government years before the acquisition of the Territory by the United States, under the treaty of 1848, between the two governments. Such legislation has not only operated oppressively and injuriously on the interests of the numerous holders and occupants of these grants, but upon the prosperity of the whole people of New Mexico, by creating doubt and confusion as to all titles to lands in the acquired Territory of New Mexico, granted to them or their predecessors as citizens of the Republic of Mexico; and by them held and possessed as *bona fide* grants, and as such considered and respected by the Government of Mexico up to the date of the transfer of her sovereignty over the Territory, to the United States. That the Government of Mexico so held and respected these grants of land to her citizens, and that she considered them segregated from her public domain, and as private property, lawfully in the possession of the grantees, and their legal representatives, is conclusively shown by the safeguard thrown around these private vested rights of her citizens inhabiting the ceded Territory at the date of the Treaty of Cession, in Article VIII of that Treaty—the Treaty of Guadaloupe Hidalgo, of February 2, 1848—one the following stipulations:

"Mexicans now established in the Territories previously belonging to Mexico, and which remain for the future within the limits of the United States, as defined by the present Treaty, shall be free to continue where they now reside, or to return at any time to the Mexican Republic, retaining the property they possess in said Territories, or by disposing thereof, and removing the proceeds whenever they please, without their being subjected on this account to any contribution, tax or charge, whatever."

"In said territories *property of every kind*, now belonging to Mexicans not established there, should be inviolably respected. The present owners, the heirs of them, and all Mexicans who may hereafter acquire said property by contract, should enjoy with respect to it guarantees equally as ample as if the same belonged to citizens of the United States." And in Article 9: "Mexicans * * not preserving the character of citizens of the Mexican Republic, conformably with what is stipulated in the preceding article, shall be incorporated into the United States, and be admitted * * to the enjoyment of all the rights of citizens of the United States, * * and in the mean time shall be maintained, and in the free enjoyment of their liberty and property."

It is evident that these solemn treaty stipulations, agreed to, signed and ratified by both the high contracting parties, mean exactly what they state—nothing more, nor nothing less, which is, that "property of every kind *now* (at the date of the Treaty) belonging to Mexicans" must be inviolably respected, with equal guarantees, as if the same belonged to citizens of the United States, whether retaining the character of Mexican citizens, or becoming citizens of the United States, and to be equally protected in the enjoyment of the same.

Is it not clear and beyond doubt that Mexico, in making this treaty, meant that the whole property her citizens in these ceded territories *had and then possessed under her government and authority*, should be thus protected and guaranteed, and that the United States also thus understood it, and by agreeing to, and ratifying the treaty, pledged the nation's faith to the fulfillment of the same?

By what right, therefore, can Congress, in disregard of the solemn stipulations of this treaty of Guadaloupe Hidalgo—the highest law of the land, under the constitution, in all things to which it pertains—by its legislation alter, amend or add to, the meaning, intent or obligation of that treaty, or in any way diminish, curtail or destroy the property, whether land or other property, which the government of the United States is under obligations to guarantee and protect to the possessors? Would it not be a *stain* upon the nation's faith, and an outrageous invasion of the private vested rights of these *acquired Mexican citizens* and their heirs and assigns, to legislate a *proviso* into the treaty of Guadaloupe Hidalgo. "That they *shall* be protected in the property they possessed at the date of the treaty: provided no one individual claimed more than eleven square leagues of land, eleven thousand sheep, eleven hundred mules and asses, and other property in proportion? Yet upon this principle Congress has legislated on the land grants in New Mexico, ignoring its own legislation in the Act of July 22, 1854, establishing the principal upon which the private land claims of New Mexico should be investigated and decided as to the validity of their title "under the laws, usages and customs of the country, before the cession to the United States," and reported to Congress for confirmation, when found to be *bona fide* grants made by Spain or Mexico, and lawfully in possession of the grantees, or their legal representatives at the date of the treaty.

Congress has assumed the position and functions of a court, for the correction of the errors of the Mexican government, in the execution and practice of her own laws, in the granting and distribution of her own lands, and in the segregation of the same from her own public domain, and has in one or two instances legislated to the effect, that neither the government of Mexico, nor the governors and legislative assemblies of New Mexico, late a department of the Republic of Mexico, and acting under its authority and laws, had a right, under the colonization laws of Mexico of 1824, and regulations of 1828, to grant to one individual colonist more than eleven square leagues of land, and that these colonization laws apply to all land grants in New Mexico made by the government of Mexico since the year 1824, and that therefore all grants of land made during that period, in excess of eleven square leagues to any grantee in New Mexico, was unlawful as to the excess, but good as to the eleven leagues, and notwithstanding the faith of the government so decidedly pledged in the treaty to protect and guarantee "property of every kind" in the possession of the inhabitants of the acquired territories at the date of the treaty—declares in its capacity of a court for the correction of the errors of administration of law by the preceding government, that they will *correct this error*, and by legislation cut down and curtail such grant to eleven leagues to each grantee.

But let us examine the colonization law of 1824—especially as to its applicability to land grants made by the Republic of Mexico in her province of New Mexico. In the examination of law it is the fair and proper principle to look at the *whole law*, and construe it according to its general interest and purpose.

Section first of the decree (of the Mexican Congress) of August 10, 1824, respecting colonization, is as follows: "The Mexican nation promises to those foreigners who may come to establish themselves in its territory, security in the persons and property, provided they subject themselves to the laws of the country."

The 2nd section says, "The objects of this law are those national lands which are neither private property, nor belong to any corporation or pueblo, and can therefore be colonized."

Section 4 says, "Those territories comprised within twenty leagues of the boundaries of any foreign nations, or within ten leagues of the sea coast, cannot be colonized without the previous approval of the supreme general executive power."

The 12th section of the decree restricts the ownership of one person (colonist) to eleven square leagues in all.

Now is it not sufficiently and clearly declared in this decree, that its *sole and only object and purpose* is to colonize "those foreigners who may come to establish themselves, etc., etc.," and the general intent to restrict *the granting of lands to* FOREIGNERS?

It will be seen that the restrictions as to locality and quantity are such as exclude foreigners from settling on the sea coast and frontiers of the Republic, and from acquiring such positions and strongholds as to endanger the country in the event of foreign war. This was evidently the *whole intent* and scope of this decree of the Mexican Congress. It is evident that it was not applicable, or intended to *apply to grants made to* MEXICAN *citizens.* The spirit, intent or *practice* under this decree does not sustain the idea that the Republic of Mexico in regulating donations of her public domain to *foreign colonists*, intended to restrict her right of sovereignty in the granting of her own public domain to *her own citizens*, nor is such a restriction at all sustained by the *practice*.

The daily practice of the Mexican government in all the states and provinces of the Republic since the acquisition of its independence of Spain, has been to grant to her own people the lands petitioned for by them, *within certain bounds and natural land marks, regardless of quantity or extent of area, or measurement of leagues, or restrictions mentioned in the decree of* 1824.

The records of every state and territory of the Republic of Mexico, the records of New Mexico, show the same practice in the granting of lands by her authorities duly empowered to do so, by the general government of Mexico, and further, *no grant thus made in New Mexico, from* 1821 *to* 1848, *has been vacated or annulled by either the general government of Mexico, or the local government of New Mexico* acting under the authority of that general government. It is moreover a fact shown by the record, that no grant of land has ever been made in New Mexico—with any--the slightest regard to the decree of 1824, as to quantity of land or form of grant; and that with the exception of some ten or twelve grants, of all those which have been investigated, approved and confirmed, under the Act of the United States Congress of July 22, 1854, no mention is made of leagues or measured distances, or square leagues, except in one instance. The large majority of land grants in New Mexico made by the governments of Spain and Mexico, are described by natural objects as land marks, or artificial monuments, erected for the purpose by the officer placing the grantees in possession.

The facts therefore stand clearly proven, that in practice, neither the government of Mexico, nor the local officers of her province of New Mexico, ever considered the restrictions contained in the Mexican Congressional decree of 1824, respecting colonization, as in any way applying to, or restricting them in the granting of lands to citizens of the Republic, and that the Republic of Mexico made no mistake in holding and protecting these grants as valid, *vested*, private rights, around which she attempted to extend her protection, in making the solemn treaty stipulations contained in the articles of the treaty of Guadaloupe Hidalgo above cited.

Congress therefore, in constituting itself a high court for the correction of errors of the government of the Republic of Mexico in granting *her own lands to her own citizens*, prior to the treaty of Guadaloupe Hidalgo, stands thus:

1st. It finds no errors to correct that could possibly be acknowledged as such by the principal party in interest, the government of Mexico having acknowledged and sanctioned, by long and continued practice, the granting of her own lands to her own citizens, greatly in excess of eleven square leagues.

2d. If such error existed in the execution of her own laws by the government of Mexico, Congress has no right under the constitution, the treaty, or the laws of nations, to correct it, as it cannot be a court of review over the administration by a foreign power of its own laws.

3d. Congress by such legislation violates the nation's faith, pledged to the Republic of Mexico to protect and guarantee to the Mexican inhabitants of the acquired territories the property in land, and all other property which had been in their possession under their own government, and remained theirs in legal possession, acknowledged by their government at the date of the treaty of Guadaloupe Hidalgo—not a *part* of that property, or *such part* as Congress may decide that the Republic of Mexico had a right to give—but the *whole property* in the hands and possession of Mexican citizens, with the sanction of the Mexican government at the date of the treaty.

4th. The result of such legislation, if carried into effect, would be an inexcusable and unwarranted invasion of private rights, destruction of private interests—disregard of treaties, national and international law, heretofore unparalleled in our national legislation, or in the treatment of all civilized and enlightened nations, of the inhabitants of territories acquired either by conquest, treaty or purchase.

5th. Congress by such legislation assumes to reverse or ignore the decisions of the supreme court of the United States in a large number of cases, arising in acquired territories since the acquisition of Louisiana and Florida, and especially those arising the recently acquired territory of California, in regard to the extent of grants of land. I will here refer to a few of them only.

In the case of *Higueras* vs. *The United States*, 5th Wallace, 827, the Supreme Court says: "That when the grant is made by specific boundaries, the grantee is entitled to the entire tract described."

United States vs. *Sutherland*, 19 Howard, pages 363, 365, the court says: "Since the country (California) has become part of of the United States, these extensive rancho grants, which then had little value, have now become very large and very valuable estates. They have been denounced as enormous monopolies, princedoms, etc., and this court has been urged to deny to the grantees, what it is assumed the former government had too *liberally and lavishly granted.* This rhetoric might have a just influence when urged to those who have a right to *give* or *refuse.* But the United States have bound themselves by a treaty to *acknowledge and protect* all *bona fide* titles granted by the previous government, and this court has no discretion to enlarge or curtail such grants, to suit our own sense of propriety, or defeat *just claims*, however extensive, by stringent technical rules of construction, to which they were not originally subjected."

United States vs. *Moreno*, 3d Wallace, pages 478, 491: *Broad* vs. *Tedey*, the Supreme Court held that "the cession of California to the United States did not impair the rights of private property—these rights are held sacred by the laws of nations, and protected by the treaty of Guadaloupe Hidalgo."

In the case of *The United States* vs. *Peralta, et al.*, 19 Howard, p. 347, the court says: "We have frequently decided that the public acts of public officers, purporting to be exercised in an official capacity, and by public authority, shall not be presumed to be usurped; but that a legitimate authority has been previously given or subsequently ratified."

To these references to the opinion and decisions of the United States Supreme Court I will add the remark, that in no case taken by appeal to the Supreme Court of the United States from any of the acquired territories, has the title to lands under a grant from Spain or Mexico, in other respects unobjectionable, been held void by that court, upon the sole ground that the quantity of land granted was in excess of *eleven square leagues*, or on the ground of any quantity of land it might contain within the boundaries described in the papers of the grant.

IRRIGATION.

In the United States, east of about the 103d meridian of longitude, west from Greenwich, irrigation is rarely resorted to, all the cereals growing to maturity without its aid. But west of that meridian to the Sierra Nevada it is essential to a sure and an abundant crop. Though it is viewed in the states to the east of us as an unnatural, a costly, and an unnecessary auxiliary to nature, and is unpopular, the new great west hereaway believes, and from experience has found to the contrary. It is an important and profitable part of our system of agriculture. To be understood and appreciated it must be seen in practice and through its effects. It cost less in money and labor than does clearing the lands in the eastern states, or draining them in the western. It fertilizes the land, the water being charged with fertilizing matter, and keeps up its producing capacity thereby. It saves all loss of crop by drouth or irregular rainfall. It enables the farmer to regulate his work to his will and convenience, a given amount of labor and attention to his fields thus going much further than when the work presses at irregular and uncertain times. And it often doubles or quadruples the crop cultivated by its means.

The United States surveyor general in a communication to the General Land Office of June 25, 1868, in writing of the barrens and desert lands in New Mexico, and the means of irrigating and reclaiming them, says:—

"Properly so called there are neither barren nor desert lands to any great extent in this district. The Territory is properly divided between valleys, which can be irrigated by the streams flowing through them, mesas or table-lands—under which designation I class all the lands not mountain or irrigable valleys—and mountains. In a communication to the General Land Office in 1866 I estimated the arable lands of this district at one million acres. The term arable was used as synonymous with irrigable, as no lands can be cultivated here with any certainty of raising a crop without irrigation. There is a considerable rainfall during the months of July and August, but there is so little rain during April, May and June that without irrigation crops will ordinarily perish.

"The method of irrigation is as follows:—Ditches or canals are excavated, and the water conveyed from the stream with just fall enough to preserve the full quantum or volume deemed necessary, and diverging from the stream as the surface of the land will permit, so as to include all the lands below, i. e. between the greatest elevation to which the ditch can be carried along the tract to be irrigated and the stream. The land is prepared for planting by laying it off in beds or lots averaging in size, according as the surface is level or otherwise, from a sixteenth part of an acre to two or three acres. Around each of these beds—which are required to be level or nearly so—there is raised a light embankment, six or eight inches above the level, clearing a shallow *acequia* between, through which the water is drawn, and from which the land is flooded to the depth of two or three inches, as often as required for the growth of the crop. The water being let through the embankment as above, and the beds covered to the proper depth, the embankment is again closed, and the water left to be absorbed by the soil. The small irrigating ditches above described communicate with the main ditch, the *acequia madre*, but the water is only suffered to flow in them when needed for the irrigation of the land which they divide or to which they lead. To mature a crop of corn, wheat, barley or oats, the land should be irrigated ordinarily once in ten to fourteen days, vegetables a little oftener; but during the months of July and August the rains supply much of the necessary moisture, so that irrigation during those months, or a portion of them, is often unnecessary. It may be proper to state the amount of irrigable land is only limited by the amount of water in the stream—even the Rio Grande might all be used in the irrigation of the lands in its valley. The water supplied by irrigation not only affords the necessary moisture for the growth of vegetation, but also enriches the soil by depositing the sedimentary matter held in solution, and thus lands which have been under annual cultivation for more than two hundred years still produce excellent crops, without ever having been manured or restored by other means. It will be observed that to prepare land for planting, and to cultivate it properly by means of irrigation, requires very much more labor than where Providence sends the early and the latter rain; but it has its advantages also. If the farmer has a never-failing stream of water with which to irrigate his land, his crop need not be cut short by drouth, nor injured by excessive rains.

"The mesas or table-lands include fully two-thirds, and perhaps three quarters of the entire surface of New Mexico. The greater part of the land produces excellent grass for pasture, and, with irrigation and cultivation, would produce all of the cereals and vegetables equally well with the valleys; but for the most part they have so great an elevation above the streams that, if there were surplus water after irrigating the valleys, they could not be reached by irrigating canals. The only hope therefore of reclaiming the table-lands of New Mexico is by means of artesian wells. * * * * * * No other attempt (than that made by the general government, and suspended in 1858–'59–'60, on the staked plain, and on the mesa twenty-five miles south of Santa Fé*) has been made in New Mexico to obtain water by sinking artesian wells; and the question as to the practicability of obtaining water for irrigation by this means is yet to be decided. The soil upon the greater part of these table-lands, or plains, as they are sometimes called, is good. The vegetable growth is grama grass of two or three varieties, the palmilla, amole or soapweed, many varieties of the cactus, and in places the artemesia. Scattering piñon and cedar, and in the south a species of the live oak, cover considerable districts, connecting generally with the forests of the mountains."

The surveyor general in his annual report for 1873, speaking of irrigation, says:—

"This is a subject of first class importance to this as to the other Territories. Considerable attention is bestowed upon it by prominent citizens. * * * * * * It is proposed, I believe, to digest a plan to be laid before congress, to grant some portions of the public domain to aid the work. It would be very proper and politic for the general government to do this, on the same principle that it gives the swamps and overflowed lands to the States in which they lie to be by them reclaimed. The principle, I suppose, is the same—but in one case there is a troublesome surplus of water, and in the other a dearth of that useful fluid. If it is *proper to give* WET LAND PROVIDED WE WILL DRY IT, *it is surely right to give us the* DRY LAND IF WE WILL WET IT! With an efficient system of irrigation in the valleys of our streams, the finest of crops can be raised, and with more certainty as to their growth, and with more safety in harvesting, than where the reliance is entirely upon the fall of rain."

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* And we may add except that made in 1870 at the Placer mines, south of Santa Fe, and after partial success suspended for want of capital.

In the suggestion of the surveyor general, which we have emphasized in the foregoing, we find combined an excellent instance of official wit and a laconic array of solid argument. The plan which he says it was proposed to digest and present to congress for its sanction is now pending before that body in the form of a bill for reclaiming and utilizing by means of irrigation the vast fertile table-lands west of the Rocky mountains. We trust the bill will be enacted into a law. In this Territory the subject of conveying the necessary volumes of water from the rivers to the fertile uplands and rich gold placers, with the purpose of irrigating those, and washing the dirt of these, has received some attention. And in this connection we may mention that an estimate has been made of the practicability and cost of carrying four thousand inches of water from the Pecos river to the gold placers south of Santa Fé. The subject was considered, and the estimate made by very competent parties, and by them it is believed to be quite feasible to take a ditch out of the Pecos, sufficiently high to carry 4,000 inches of water to a point which will give an altitude of 600 to 800 feet higher than the placers. From this terminus of the ditch, a distance of about 35 miles, iron pipe to convey the above amount of water is estimated to cost $300,000; with the proposed head 20 hydraulics could be supplied, washing an immense amount of rich pay-dirt, and uncovering, we may say, sufficient gold to pay expense of ditch and pipe in six months, and eventually uncovering millions of dollars' worth of gold, and besides the thousands of tons of rich gold bearing quartz, copper and silver ores it would bring to light, and give employment to a large number of miners.

INDIANS IN THE TERRITORY.

Besides the seven thousand peaceable, and peaceful and honest and industrious Pueblo Indians in their villages in New Mexico, there are nearly twice as many "wild" Indians—savages who quite until the recent inauguration of the present reservation policy of President Grant, had been for centuries the scourge of New Mexico and the New Mexicans. They depredated upon life and property continually, extensively and everywhere. This country has witnessed and experienced, generation in and generation out, an incessant war of races between the white man and the red, the latter continually raiding for blood and booty upon the frontier settlements, and the denizens of these as often pursuing him for revenge to his inaccessible mountain fastnesses. It was so alike under the Spanish, the Mexican and the American governments; and while this relation of the two great classes of the inhabitants of the Territory continued, of course there was no encouragement for the development of the resources of the country, and indeed hardly a motive for the acquisition or accumulation of perishable estate or for the utilization or improvement of landed property.

The wild Indians of New Mexico, some of whom still roam and prey, but most of whom are now gathered upon reservations, are in name and about in number as follows:

Navajos	8,500	
Apaches	4,500	
Utes[*]	1,500	
		14,500

The Navajos being a tribe without subdivisions, the Apaches being subdivided into Jicarillas, Gilas and Mescaleros, and the Utes into Capotes, Wemenuches and Mohuaches.

All these are the red rascals who, together with the frequent assistance in earlier times of their confederates in crime and thievery, the Comanches and Kiowas, so long depredated upon the lives and property of our people. But their day has gone, though the savages themselves remain; and while the land yet stinks of their presence, we shall here say a few words concerning them and their management.

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[*] The proper spelling and pronunciation of the word is *Yuta*—the Americans having corrupted and spoiled it with "Utah," and then annihilated it with "Ute." The Territory of Utah has a hideous misnomer.

For the last year or two all has been comparatively speaking quiet in New Mexico, with the exception of the Apaches in the south western part of the Territory, who are fast coming under the banner of peace, the result of the formidable and just chastisement they are receiving at the hands of General Crook—something they have deserved for many years. The depredating, unsettled state of affairs in certain localities instead of having been quashed and silenced, have been buoyed up by the malaction, and utter ignorance of authority appointed to select reservations and to control the Indians. We refer to the Quaker policy, the Collier and Howard humbugs whose ignorance in such matters must cost the government millions of dollars; the great and fatal mistake of Howard in selecting an Indian reservation, one of the boundary lines of which being the national boundary between the United States and the Republic of Mexico, is preposterous. The money consideration of this blunder is slowly but surely coming to light, and will be enormous in amount. The states of Sonora, Sinaloa, Chihuahua and Durango, have in a manner been in part devastated and ruined from the forays of the Apaches of New Mexico and Arizona, and well may we say that the money consideration will be enormous, when the Republic of Mexico shall have justice meted out to her from the treasury of the United States to cover these depredations.

Why the government should select and send out such men, who know nothing whatever of the Indian character, or of the wants and wishes of the people of the Territory, we cannot imagine, unless it be for favor to one, whilst thousands suffer the consequences. Why does not the government leave to the people of the Territory, to her experienced men, who are identified with the country, the selection of proper reservations, in proper localities, and why are not these Indians placed under experienced men, who are numbered by scores in the territories? To the contrary, inexperienced, unfitted strangers are sent out to dictate to the people where the Indian shall be placed, regardless of the consequences to the inhabitants of the Territory—no wonder we have trouble. The cause of the constant complaint from both parties is apparent, and it is high time it should be remedied, before blood and massacre pay the tribute. In other times of our recollection, Indian men, or in other words, men of experience in Indian matters, were called Indian men, and were selected to make important treaties and demands, who appeared upon the council grounds, backed in force by the military power, and demands made which were always acceded to by the Indian. Now the style is to ask the Indian to dictate his own terms, as in the Howard–Cachise case. After thirty years experience on the frontiers, several of which were spent with different tribes of Indians, we are prepared to say this: First, it is essentially necessary and all important to whale them without mercy, and until they crawl upon their hands and knees and beg for peace, and be sure there is no deception, or in other words, *possuming.* Then place them on reservations, *disarm* and *dismount* them completely, make it the penalty of death to be seen off the reservation; likewise to the white man who is caught upon it without permission after well defined boundaries are established and constantly proclaimed, with a double line reservation, or a strip of land five miles wide as neutral ground, around the reservation, to be seen upon which the penalty shall be death; give them a sufficient number of breeding cattle and sheep to warrant the yearly increase cannot be consumed by them after breeding five years. In the mean time feed them *high* with flour, bacon, grease, sugar and coffee and meat, and after about two years of such feeding they will die off faster than they can be killed off *any other way in a christian like manner.* After five years, if they have not learned to raise wheat and corn, let them subsist on meat alone, not allowing them to waste any under severe penalties, or if they have corn and wheat, have it made into flour and meal, not allowing them to manufacture the grain into *tizwin,* upon which the rascals get continually drunk. Let the military arm of power control Indians and reservations, use the black snake whip freely on the lazy, indolent characters, and make them *git* to the herd or work, and you will soon have no idlers, but a peaceable, docile lot of aborigines in camp.

Our idea of a reservation for the Ute Indians, now occupying the northwestern part of New Mexico, the southwestern part of Colorado, and the southeastern part of Utah, would be a point below the junction of Green and Grand rivers, making the Colorado river of the west the western boundary of said reservation, selecting on the north and south, at a suitable distance, one each of the numerous immensely deep chasms which run from the plains on the east into the Colorado river, and on the east a line of military works sufficient to guard that line alone. Here the western boundary of the reservation, the cañon of the Colorado river, is impassable for man or beast; on the north and south the boundaries are a species of awfully sublime, deep, rugged, almost bottomless chasms, and as difficult to cross as the cañon of the Colorado above referred to. Here is a place for a reservation where no white settler will venture for the next century; where the Indian can find game for time indefinite, and be entirely out of the way of the immense immigration which is flowing west, and which is not unlike the tidal wave of the ocean—every obstacle in its way, particularly the Indian, will be crushed and exterminated, if not removed in time.

Every article of merchandise furnished them, viz: blankets, different sizes, 'coarse cloth and indigo blue merrimac prints, which are *really the only three articles* they require, should be manufactured expressly of some peculiar pattern, and the words Indian Department worked into the material in large letters. the hoes, spades, knives, and such articles should also be stamped in the same way, and a law made, making it an offence punishable by imprisonment five years at hard labor for any person to have in his or her possession any of the above articles. With such a policy we would have no more trouble with wild Indian tribes, reduce the cost of maintaining them several millions of dollars, with a sure and certain prospect, a fact beyond doubt, that they would after five years subsist themselves from off the increase of their cattle and sheep herds, and have a surplus of beef and mutton to turn over to the government yearly for use of the troops, and in payment of their annuities in merchandise; we could unite at great length upon the advantages of such a policy, and show its real merits; we might also make mention of the reservation selected for Jicarilla Apaches. The absolute and monstrous outrage here committed upon the inhabitants of the Territory, and the unfitness of the location for the Apaches—but we stay further comment—the Indians have been humored to such an extent that nothing but a sound thrashing will bring them to reason, subjection and respect, and that time may come the present season from all appearances.

In writing of the New Mexico Indian, it is pleasant to turn from the wild savage to the gentle and meritorious Pueblo. The Pueblos, like the Israelites, are a "peculiar people." They number in the Territory about seven thousand, all of them the inhabitants of well constructed villages, and of comfortable dwellings therein, the cultivators of the soil, and the growers of live stock. They were living in towns when first discovered by the Spaniards.* The testimony of the earliest explorers—Cabeza de Vaca, Bastañeda and Coronado—is conclusive upon this point. In the year 1680 they revolted against their Spanish oppressors in the country, and aided, as it may be supposed, by the wild Indians, killed or drove them all out of the province. The re-conquest was not complete until the year 1693; but in 1689 the governor and captain general, Domingo Jironza Petriz de Cruzate, issued from El Paso to all the pueblos, except that of Sandia, which was established since (in 1748), a paper recognizing their respective claims to the lands occupied by them—in some cases granting them certain limits, in others simply admitting and conceding the limits claimed by the pueblo.

The pueblo Indians of New Mexico live entirely by agricultural pursuits. They have small flocks of sheep and goats, and herds of cattle and horses, which they pasture upon that part of their lands unfit for cultivation. The flocks are always attended by pastores who drive them to the pasture grounds in the morning, and return them to the village for safety at night. The milk of the ewes and goats furnishes no inconsiderable portion of their daily food. They profess the Roman Catholic religion, and are sober, industrious and virtuous. Under the Mexican government they voted and held office, and enjoyed all the right of citizenship—rights which have not heretofore however been acknowledged by the United States. Each pueblo or village is a community within itself.† The male inhabitants of the village on Christmas eve annually elect a governor, lieutenant governor, war captain, and subordinate officers, who order the internal affairs of the pueblo, the people obeying implicitly the officers of their choice.

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* The earliest record we have looking to the puebloization of the Indians of ultramarine possessions of Spain is the decree of the emperor Carlos II, of March 21, 1551, setting forth that in pursuance of a royal command, of 1546, the prelates of New Spain, now Mexico, specially convened, had resolved that the Indians should be reduced to pueblos; and Felipe II made a statute and regulations for the protection of the Pueblo Indians, and for the settlement of others not then living in villages.

† The populations of the pueblos respectively are given in our tabular statement of the population of the Territory by counties.

The study of the Pueblos is a most interesting one, though one which it is believed will never unveil the mystery of who they were in the zenith of their power and glory in this portion of the world. We believe it was the ancestors of those we have among us to-day who built and inhabited the evidently immense and populous ancient pueblos or towns whose ruins stand all over New Mexico—but the mystery as to who and what manner of people it really was who built the ancient pueblos we refer to, is as much a question still as is the mystery of the builders of the pyramids. Certainly they were a people powerful in numbers, and advanced in the arts. These ancient people are usually referred to as the Montezumas. In our mountains and valleys are many ruins of the Montezumas, and they extend south into Chihuahua, and west into Arizona. Some of these old ruins of pueblos indicate that their denizens numbered even tens of thousands. The Montezumas clearly were the most civilized of all the Indians, and they were evidently advanced in many arts and sciences; had a complete system of government, and their kings had absolute sway over an empire whose extent was great, and much of which, since it has been acquired by the United States, remains unexplored, and whose population amounted to hundreds of thousands. They were an industrious people, adepts in the cultivation of the soil (by irrigation, as the remains of their ditches show), in mining, and in the manufacture of woolen goods, in which latter industry some of the Indians of the country, the Navajos, still excel. They built houses and temples; they were a great nation of miners; the empire was and remains a rich extent of precious metals, and indications are found of their working of mines on the streams and in the mountains.

The Pueblos of to-day—says Major John Ward, formerly government agent among them, and whom twenty-five years of constant, intimate intercourse with them had made thoroughly acquainted with their character and all their customs—are all of them nominally Roman Catholics in religion, and as far as can be discerned, appear to be sincere and earnestly devoted to the rites of that church, whose showy ceremonies present to them a religion they can *see*, and for that reason in some degree comprehend and appreciate. Each town has its church edifice, which is held in high respect. The people esteem and obey their priests. They generally marry, baptize and bury according to the rules of that sect. The holy days are generally attended to. Each has its patron saint, whose name the pueblo bears, with few exceptions, and whose anniversary is never neglected. On that day a great feast takes place, and after the ceremonies pertaining to the church are over, which occupy the first part of the day, amusements of all kinds are universally resorted to, such as foot racing, horse racing, cock fighting, gambling, dancing, eating and drinking, with the usual accompaniments. On such occasions liberality is an especial virtue, and no pains are spared to make everybody welcome. Some of the Pueblos are noted for these feasts, and great numbers from distant parts of the country flock thither to enjoy the amusements and share their hospitalities. Independently of the foregoing, however, there is every reason to believe that the Pueblos *still adhere to their native belief and ancient rites.* That most of them *have faith in Montezuma is beyond a doubt*, but in what light it is difficult to say, as they seldom or never speak of him, and avoid conversations on the subject. Like other people, they do not like to be questioned on subjects which they believe to concern no one but themselves. It is stated by some that the Montezuma of the Pueblo Indians is not the Montezuma of the conquest, but an agent of the Spanish and Mexican governments, formerly chosen to protect the rights and interests of the Pueblos, and called *Protector de los Indios.* Be this as it may, one thing is certain: that this view of the subject differs entirely from that of the Indians. They believe to this day that *Montezuma originated in New Mexico*, and some go so far as to designate his birth-place. In this they differ, however, some affirming that he was born at the old pueblo of Pecos, just east of the city of Santa Fé, and others, that his birth-place was an old pueblo located near Ojo Caliente, the ruins of which are still to be seen, north of Santa Fé about fifty miles.

There are within the limits of New Mexico nineteen existing "pueblos," the names of all of which are given at the end of this paragraph, including that of Pecos, the one most recently depopulated, and whose remnant of inhabitants removed to, and incorporated themselves with the Jemez pueblo some years since. The pueblo of Zuñi stands in Arizona we believe, though it is thought by some to be in New Mexico, wherein all the maps locate it. The interritorial line, which is 100° west longitude, has not yet been surveyed and marked, and the pueblo probably stands a few minutes west of it, in about latitude 35° 10′. It belongs naturally to the pueblo system of New Mexico, and we have included it among the population of our county of Valencia, though it belongs more properly perhaps to that of the county of Santa Ana.

The old Spanish archives preserved at Santa Fé, show that formerly the respective pueblos were referred to as of the Tegua, the Queres or the Taro division of the Pueblo Indians. The following list of the villages examined in connection with a map of the Territory, showing their localities, will elicit the interesting fact that some intervening villages speak dialects different from those of their nearest neighbors, and identical with those of distant ones; which circumstance suggests, we think, that at some time long agone, some cataclysm must have occurred in this country among the pueblos, which occasioned a radical confusion and disorganization of peoples and communities.

The Indians of the pueblos of Santa Clara, Tesuque, Nambe, San Ildefonso, San Juan, Pojoaque, Pecos, Jemez, speak one dialect—the Tegua; those of the pueblos of Taos, Picuris, Sandia, Isleta, speak one dialect—the Tano; those of the pueblos of Santo Domingo, Cochiti, San Felipe, Santa Ana, Sandia, Laguna, Acoma, speak one dialect—the Queres.

These interesting inhabitants of our Territory, the Pueblo Indians, are an important, and when they assume the practical exercise of their political rights and privileges, a powerful constituent of the body politic. Possessing and exercising the functions of Mexican citizens under the constitution and laws of the Republic of Mexico, and having a status as such citizens at the time of the change of national sovereignty in 1848, though declining until recently to claim citizenship under the American government, they are nevertheless, and have been for the last quarter century, under international treaty, and entirely aside from Article XIV of the United States constitution, *de jure* and *de facto* American citizens, and entitled to vote and hold office, and exercise and enjoy all the other rights and privileges of such citizens. The supreme court of New Mexico has twice so held and decided—once in 1867, and again in 1874. On this occasion several cases were before the court on appeal involving the status of the Pueblo Indians as to whether they are citizens of the United States, by what tenure they hold their lands, and whether they have the right to sell and dispose of the same as other citizens may do. These cases were brought into the supreme court from the district court, and were instituted to recover the penalty imposed by act of Congress of 1834, known as Indian Intercourse Act, for settling on Indian lands. The court decided substantially that the *Pueblo Indians of this Territory were made citizens of the Republic of Mexico* by the plan of Iguala, the treaty of Cordova, and the decrees of the Mexican Congress passed in 1824, and being citizens of Mexico at the time that New Mexico was acquired, were included in the term 'Mexicans,' as used in the treaty of Guadaloupe Hidalgo, and thereby became *citizens of the United States, with full power to sell and dispose of their lands*, which they hold primarily under grants from Spain and Mexico, which have been confirmed by acts of Congress, and patented in conformity with law. Many of these grants are more than two hundred years old, and these Indians have exercised the right to sell and convey in fee simple for more than fifty years. The Indians themselves make no complaint, but maintain good faith towards the purchasers, and wonder why the government should seek to annul their *bona fide* contracts, or interfere with their rights and privileges as citizens.

It is conceded that their lands are fully equal to any of the fruit or grain lands in the Territory in location and productiveness, and their standard of cultivation equals in excellence the best methods of the country. This decision will augment the voting population of the Territory at least four thousand, and will relieve the government from the necessity and expense of supporting pueblo agents, and the distribution of farming implements amongst them, when they are as well or better able to buy for themselves than the majority of our other citizens. The purchasers of these lands number at least five thousand people throughout the Territory, and they are now relieved from anxiety as to the tenure of their estates, because they believe that the supreme court of the United States will approve the decision, the cases having been appealed by the government.

THE MESILLA VALLEY.

This portion of southern New Mexico did not become United States territory, like the balance of New Mexico, in virtue of the treaty of Guadaloupe Hidalgo of 1848. It was acquired under the treaty of December 30, 1853, and the United States Congress, by the act approved August 4, 1854, declared that "until otherwise provided by law, the territory acquired under the late treaty with Mexico, commonly known as the Gadsden treaty, be and the same is hereby incorporated with the Territory of New Mexico, subject to all the laws of said last named Territory."

Previous to 1850 there were no white settlements, except at Doña Ana, in the Mesilla valley. Between the dates of the treaties of 1848 and 1853 the national government of Mexico and the state government of Chihuahua were desirous that those Mexican citizens in New Mexico who wished to retain their character as such, should remove into the territory of the Mexican Republic, and they each made provision for their transportation thither. A considerable number of families went into the valley from the up country, and located in colonies, authorized and aided by those governments, more particularly the state government, which had made grants of land to the colonists, and encouraged with practical aid emigration and settlement there.

At Doña Ana Bend, a colony grant, as shown by the records at Chihuahua, was made by the state government in 1839, and a colony, which for a time flourished, was established there. We do not know that it was ever depopulated and abandoned, though this is very probable, in view of the fact that in those days settlements everywhere in New Mexico were ruinously harrassed by Indian depredations upon life and property. The place is now well settled, a large and flourishing population of farmers and stock-raisers inhabiting the spot. The United States surveyor general reports in 1865 that the grant to the colony of Doña Ana, made by the state government of Chihuahua in 1853, is about sixteen miles in length along the left bank of the Rio Grande, and from one to three miles in width of irrigable land, and one league in width of mesa or pasture land, called *egidos*, or commons. The grant embraces the town of Doña Ana, containing about a thousand people, Las Cruces containing about two thousand, Tortugas, containing about three hundred, and ranchos containing about three hundred and fifty.

The town of Mesilla, below Doña Ana, was settled in the year 1850 on public land, to which, in 1853, the inhabitants received a grant from the Mexican government as a colony, the limits of which colony lands embrace also the town of Picacho, the whole on the right bank of the Rio Grande, between it and the mesa or table land, and extending north and south about ten, and east and west about two and a half miles. The town of Mesilla contains perhaps two thousand, and the town of Picacho, with surrounding ranchos, perhaps one thousand souls.

The town of La Mesa, just south of La Mesilla, is situated, we think, upon public land, and contains about seven hundred people. They claim a tract of land extending some ten or twelve miles along the right bank of the Rio Grande, embracing about two hundred ranchos of eighty acres each. Santo Tomas is a town of about three hundred souls, situate between La Mesilla and La Mesa, and was settled in the year 1852. The people claim a tract of land about four miles square. The town of Amoles, on the west bank of the Rio Grande, below La Mesa, was settled in 1851, and is a flourishing settlement, the people claiming, we believe, under a Mexican grant, one league of irrigable and one league of pastoral land.

The government of Mexico in the year 1851 or 1852, granted to a number of citizens a tract of land for the colony of Refugio, on the west side of the Rio Grande, about six leagues north of El Paso, the land then lying in the state of Chihuahua, Mexico, now in the Territory of New Mexico, United States, the place being now occupied by a considerable number of inhabitants.

A prominent citizen of the valley, Judge Knapp, has recently written and published a series of interesting, and no doubt reliable articles, setting forth the various natural advantages and attractions of southern New Mexico, and particularly of the Mesilla valley, and we here append the major portion of the same.

THE MESILLA VALLEY.

"People in the fog-clad states are constantly inquiring, where can our asthmatics and consumptives go to find relief from those diseases which must sooner or later take away those who are affected by them? Florida, Cuba, southern Europe, and the cold clime of Minnesota have been tested, and falied to give the needed relief; then all eyes have been turned to Colorado. The rank, tropical vegetation of Cuba and Florida, saturated with moisture, and rooting under a summer heat, has proved more dangerous from their miasms, than the diseases from which the patient has sought relief. Southern Europe has proved too damp and changeable, and many a bright intellect has sunk there from the diseases they have endeavored to escape. Colorado has bright days, warm summer sunshine, cool nights, arid climate, but too cold and snowy winters, too high an elevation for persons on whose constitutions disease has fastened its fangs; and the desired spot has not yet been found by the world, because the public mind has not been pointed to this place.

THIS SANITORIA OF THE UNION

is located in southern New Mexico, where the atmosphere is more dry than in Colorado, the sky brighter, the nights sufficiently cool for refreshing sleep, and free from 'damp night air,' and the elevations are such as to suit each case, varying from the elevation of the Rio Grande at 4000 feet, to the mines in Grant county, and the high cattle ranges in the Guadaloupe ranges in Lincoln county, where 7000 feet may be selected, on the clear trout streams and cool springs of water, in an air fragrant with the scent of the pine and the spruce.

One of the reasons urged upon congress and the people of the United States for the confirmation of the Gadsden Purchase Treaty, was the acknowledged salubrity of the climate in this Mesilla valley. Since that period, and especially since the Butterfield overland mail has been drawn off, on account of the war between the North and South, little has been said about the valley itself. It has passed from the public mind as its sight has been lost from the public eye.

THIS VALLEY EXTENDS ALONG THE RIO GRANDE,

between the 33d, and 31½ degrees, is seventy miles long, and from one to six miles wide, and contains about two hundred and eighty square miles, over which the irrigating ditches may be carried. It is hemmed in on the north-west by a range of mountains, nearly 1000 feet higher than the river, on the north by the Doña Ana range, which has peaks 1500 feet high, and on the northeast the Organ peaks tower, more than three thousand feet above the valley. Thus is the valley secured from the cold winds from these directions, and which sweep over the plains and valleys farther north. Hemmed in by these mountains, in winter the ground is never frozen to obstruct the plow, and the days always bright, allow the invalid to exercise in the sunshine every day, in an almost summer heat. When the overland mail ran here, many persons reached it in search of that health they had lost in the States, and succeeded in a remarkable degree.

THERMOMETRICAL POSITION OF THIS REGION.

In latitude, southern New Mexico corresponds to Savannah, Georgia, and has a great summer heat, though in the shade it is always cool and pleasant. Its elevation gives it the winter climate of Wilmington, North Carolina, as is manifest from the vegetation which can be grown here.

THIS CLIMATE CANNOT BE EXCELLED

for its sanatory qualities. But once since the annexation to the United States has the mercury been noted below zero, and then it remained at that point but a few hours. Snows seldom whiten the ground, and never fall to the depth of two inches, or lie thirty-six hours. Not a flake has fallen for more than a year. Damp, chilly days and hot sultry nights, are unknown. The heat of summer is not oppressive, and sunstroke has never been known. The sky is clear the year round, and no day has been known when the sun and stars have not been seen. The atmosphere is unsurpassed for its dryness and purity. Full of electricity, it is wonderfully exhiliratfng, and never burdened by malarious or poisonous exhalations. Blankets are necessary for all beds on nights which follow the hottest day, because the nights are cool, though not damp. Sleeping with doors and windows open, or in the open air may be practiced without risk of 'taking cold.' The asthmatic or consumptive invalid may sit out of doors, ride or walk in the sunshine 360 days in the year, with pleasure and comfort, and may always enjoy refreshing sleep at night, thus securing the most essential condition for the restoration of a shattered nervous system, and broken constitution.

FREE AND FULL BREATHING OF PURE AIR

is the most important for a sufferer from diseases of the liver and lungs. Make such a person breathe, and he will live; whatever makes him breathe faster makes his blood flow more rapidly and be better aerated. His appetite will increase, digestion and assimilation will respond to the increased action of the lungs, which is secured by the elevation of this valley. Here one must breathe more fully and more rapidly than nearer the sea level, and his air is the purest on the face of the earth. A permanent increase of breathing capacity, caused by rare air, prevents the formation of tubercles, and often heals those already formed. At this elevation, 4000 feet, this increase is not so great as to be injurious, as is sometimes the case at higher elevations. Such are some of the conditions which give to to Mesilla *an extremely healthy and invigorating climate*, free from the malaria of the hot, damp regions of the river beds and low lands of the southern states, and from the mountain fevers, colds, influenzas, asthmas, and consumptions, of the higher ranges of Rocky Mountains, and cold fog-bound regions of the northern states. A more desirable climate cannot be found the world over. Persons shut out from the light of the sun are most disposed to consumption. For such daily sunlight is everything. Southern New Mexico has more sunny days than any region of the United States, *probably more than any other place;* and the invalid here cannot but enjoy that benefit, unless he purposely excludes himself from it.

WHAT PHYSICIANS SAY.

Florida and Cuba are warmer in winter, but they have an atmosphere loaded with vapor, and winter is the period of the greatest rains and, consequently, cloudy days. The invalid seeking to regain his health will not go to them, if he follows the advice of Dr. Chambers in his lectures on the renewal of life. That eminent English physician says:

'In choosing a home for your consumptive, do not mind the average height of the thermometer or its variations; do not trouble yourself about the mean rainfall; do not be scientific at all, but find out by somebody's journal how many days were fine enough to go out forenoon and afternoon: that is the test you require; and by that you may be confidently guided.'

Tried by such a test, and the invalid must locate in the Mesilla valley in preference to all other places. Here is no rank, rich vegetation, saturated with moisture, and constantly undergoing decomposition. Vegetation dries up, never rots. Meat hung in the open air and sun, cures, and is preserved without salt. Such air, when inhaled, gives a stimulus and vital force, which can only be given by so pure an atmosphere. One having a predisposition to consumption, comes to this valley, and is immediately relieved.

The caution given by Dr. Bancroft, of Denver, and approved by Dr. Pancoast, of Philadelphia, is not applicable to this valley, though it may be to the higher regions. And if he had lived here, as he did in Denver, he would not have penned these words:

'While earnestly recommending the curative powers of Colorado, I must stoutly warn persons in the advanced stages of pulmonary consumption against venturing into the rare air of these elevated plains; because the necessity for increased action of the respiratory organs tends to hasten, instead of retard, a fatal termination. The same cause is applicable to any form of organic disease of the heart, excepting that induced by asthma.'

The Mesilla valley is at that mean elevation which will induce proper activity of the lungs, yet its air is not so rare as to produce the injurious effects mentioned by these physicians, and while this is the best location for those suffering from pulmonary disease, it is even more true of those afflicted with asthma, and for those whose constitutions have been broken down by misamatic fevers.

CURATIVE PROPERTIES IN OTHER DISEASES.

Diseases of the liver, spleen, bronchitis, phthisis, dispepsia, general depression of the nervous system, are all relieved or cured by a residence here. The remarkably tonic properties of the atmosphere are beneficial in all these forms of disease, and restoration to health may be expected while here.

Many cases of cure might be cited, but this communication will not allow it. Many persons have arrived here suffering from a pre-disposition to consumption, from asthma to such a degree that they could not lie down to sleep, from nervous debility, and while here have either been greatly relieved or become entirely free from their distressing effects. Some have attempted to return to their old homes, before the cure was completed, and have succumbed to renewed attacks, or been obliged to return. Any person with a fair constitution, who settles in this portion of New Mexico, stands a better chance of enjoying a healthful life, and attaining his full period of 'three score years and ten,' than in any other part of the Union. To the young of consumptive families, it offers special inducements. Here many a brilliant and useful life, which might be lost in a less strengthening climate before reaching the meridian of manhood, may be prolonged to a vigorous old age.

IRRIGATION AND PRODUCTIVENESS.

This valley can all be irrigated from the Rio Grande, than which no stream, not even the Nile, affords better water for that purpose. The descent of the valley, between four and five feet to the mile, and flat, is the very best form for successful irrigation with facility. The soil is a rich, sandy loam, easily cultivated, and abundantly supplied with mineral salts. All the fruits of the warmer temperate regions grow in wonderful perfection, free from fungoid, and insect diseases and attacks. The yield of whatever is planted is enormous. The seasons ripen wheat in June, and corn, beans, a fodder or root crop may be taken from the ground the same year. Wheat gives from 40 to 60 bushels to the acre, averaging, when well tilled, 50 bushels of a quality that should be classed XXXI, and weighing 65 pounds to the bushel. This land is cheap, even such as have connections with the irrigating ditches, can now be bought for a dollar an acre. It will not be so cheap long.

COLONIES NEEDED.

No place in the 'far west' has so many inducements for the formation of colonies for settlement, as has this valley, or where labor will be more surely rewarded, and health and long life enjoyed more fully. Colonial agents should look this way, before choosing elsewhere. All that is needed is to be better known, and ready communication with the populous portions of the Union, to make the Mesilla valley as famous as it is valuable. These it will soon possess, by the Texas and Pacific Railway. Its merits can never be written; it must be enjoyed to be known and appreciated.

THE WARM TEMPERATE BELT.

Between the parallels of 31 and 38 degrees lies the most productive belt of the continent. Its great staples are cotton, rice and tobacco. But, it also produces all the fruits found further north, and many that will not grow there. All the great cities of the Union are striving for its commerce, and though but partially improved, the railways and rivers groan with the burden of its crops. The fiat of commerce has gone forth, and the pastures of Texas, as well as wood lands, farther east, are demanded for cotton, and the thousands of cattle must feed on drier grounds where cotton cannot be depended upon for want of rains. In this belt lies southern New Mexico, on whose rich grasses the herds of Texas may feed the year round, and on whose irrigable lands all the productions of this favored belt can be reared, by men breathing the purest air on the continent.

The Mesilla valley is the brightest gem in this girdle. It is seventy miles long, and contains 280 square miles of land between the banks on either side. The Rio Grande winds its way through it, touching the hard land at several points. At these points watering canals may be taken out, and, if need be, the whole stream used for irrigating the valley. Its soil is a rich alluvium of river deposits, highly charged with mineral salts, and containing sufficient sand to make easy cultivation. Its climate is mild in winter. Frosts never impede the plow, and the summer days, if hot, are always followed by cool nights. The clear, pure atmosphere always permits the sun's rays to penetrate the earth, and force forward vegetation, but dry air being a bad conductor of heat, the shade is always grateful. Refreshing coolness covers the valley at night, and the weary sleep, and are refreshed.

AN AGRICULTURAL CENTER.

The agricultural out-look of the Mesilla valley is peculiar, and the agriculturist will here be favored as at no other point in the far west. His position is exactly reversed from that of his fellow in the east, where competition every year cheapens the market for farm supplies. Here the 280 square miles have but to compete with an equal amount of land scattered over the breadth of the Territory where irrigation may be procured, and without irrigation only grass and weeds grow. While population in the mines and manufactures, and among the herders of the plains, and of non-producing seekers of health and pleasure will increase in number, the consumption of food must be increased indefinitely, the producing farm land will remain in a fixed quantity, and the cultivators of the soil must forever monopolize the feeding of a population destined to be dense, who are engaged in producing gold, silver, lead, copper, and other valuable metals and minerals, and in herding the thousands of sheep and cattle which shall feed on the plains and mountain sides. Thus it is that the farmer's chance for a large return for his investment must grow better with successive years. The prices he will obtain can only be limited by the cost at which the same products can be furnished here from elsewhere.

THE MOST FERTILE DISTRICT IN THE BELT,

and also the most fertile valley of the Rio Grande, is the Mesilla. The greatest argument, used by the friends of annexation, was the fertility of the valley.. Experience proves the truth of their claim. The yield of wheat, which is planted at any time from October to March, and harvested in June and early July, is three and four times as great as any of the states. Sixty to one of seed is the ordinary yield. Barley gives an average of 3000 pounds to the acre, and is sown in January and February, and harvested at the same time as wheat. Corn averages as high as in Illinois. Beans, peas, oats, potatoes, and sorghum, grow as well as anywhere in the same latitude.

FRUITS AND GARDENS.

The Mesilla valley excels in its fruits and gardens. The 'El Paso' grapes for wine making are unsurpassed. The juice is heavier than from the grapes of Madeira or Portugal, as the grapes remain on the vines until they commence to dry, before being crushed; and the wort contains as much sugar as the sweetest of Malaga. A thousand gallons of pure grape juice wine is manufactured from an acre of vineyard, which has cost for tending about twice as much as an acre of corn. As soon as grapes of proper size shall be introduced, Mesilla will become as famous as Smyrna for its raisins. Those grapes already here make an excellent raisin except in size.

Apples from the Northern States were introduced by myself into Mesilla ten years ago, in the form of root grafts, by mail.

Some of those trees are now a foot in diameter, and capable of bearing thirty bushels of apples to the tree. Apples often bear fruit in three years from the root graft, and varieties that bear but every alternate year in Pennsylvania, here produce full crops every year. The fruit is uncommonly large, fair and high flavored; but it ripens, as do apples elsewhere in the same latitude, considerably earlier than in Pennsylvania. No insect or disease has yet attacked the fruit or tree. The price is limited by the discretion of the seller, and must always be high. Peaches, pears and quinces of superior qualities have been introduced from the Mexican Missions. The trees grow large, are long lived, free from all diseases, and produce large crops. The almond tree grows as well as the peach, but the fruit is sometimes lost from the late frosts in the Spring. Almonds and apricots which would not bloom earlier than the apple would be a great acquisition here. No doubt such will be found or produced from seed.

ALL KINDS OF GARDEN PLANTS GROW.

In the gardens everything which is produced in the neighborhood of Washington can be grown, and of enormous sizes. All the small fruits thrive and do well, except the red currant. Onions deserve special mention for their size and mildness of flavor. Beets are a sure crop and large, and it is believed that the manufacture of sugar from beets will yet be successful.

IRRIGATION AND WATER.

Large watering canals could be cut on each side of the river, and if constructed with locks could be navigated, and excellent water powers would be created at suitable points. From these canals water for irrigation could be procured, and the entire valley watered most of the year. The descent is between four and five feet to the mile, which gives a good fall, and enables the water to be carried to every point of the valley proper. No better water exists for irrigating purposes than the Rio Grande, as it is so loaded with sediment as to leave a scale of mud after each application to the ground, and is well supplied with mineral salts; land thus watered will always remain fertile, if a small allowance of vegetable matter is annually supplied.

Water may also be obtained from the ground by pumps driven to the depth of less than twenty feet, and the water raised by wind or other means, and caught in reservoirs. Thus orchards, vineyards and gardens may be always supplied, without reference to the state of the river.

FORAGE CROPS.

The only forage crop yet reared is alfalfa, which can be cut five times during the summer, and gives a yield of eight tons of green feed to the acre, at each cutting. Land fully stocked and watered freely requires no further care. Its roots are large, strike to great depths, and are permanent for many years. For dried fodder, corn or sorghum planted in drills or sown broadcast, and late sown wheat or barley, might be used successfully. Large quantities of hay are cut on the plains whenever a fair supply of summer rains have fallen. Beets, carrots and turnips for feeding stock or household use, need not be raised from the ground till required for use, as the frosts do not injure them, especially if they are watered during the winter.

THE WINTERS ARE USUALLY DRY.

Rains seldom fall in the valley between the months of August and June, and snows exceeding two inches in depth, or lying two days at a time, have never been known. The railroad which will cross the continent by this belt, will never be impeded by snows or hindered by the vicissitudes of the seasons. The farmer can do so much of his work during the cool season, that he can afford to rest from his labors, under the shade of his fruit tree or his grape vine, during the heat of the day.

A RAILROAD CENTER.

The solid foundation of a soil and adjacent country capable of sustaining population, being given, experience has demonstrated that the growth of a place must depend upon its railway relations. Tried by that test, and the future of the Mesilla valley is already fixed. All the mountain ranges, which pass from the Isthmus of Darien to the north, that form the Cordilleras of Mexico, and the Rocky and other mountain ranges further north, are here broken down to plateaux, with but one elevation above 5,000, and the water shed is but 4,900 feet above the level of the ocean. The surveys show that the continent may be here crossed without a variation of a degree of latitude. Over this divide the Texas and Pacific is constructing its line to San Diego. The

Denver and Rio Grande narrow guage projects its line through this valley. The Atchison, Topeka and Santa Fé, or the branch of the Kansas Pacific, which are heading towards New Mexico, will find their interest to be to unite and pass down the Rio Grande, rather than pass over the high continent, often snow covered, near the 35th parallel. The conclusion seems inevitable of a railroad center in this valley.

UNOCCUPIED LAND.

Not one-tenth of the valley is occupied. Four small grants are located in the valley, and the state of Texas has also sold a small quantity of land. But to more than three-fourths of the valley the title is still in the United States, the state of Texas, with the contingent right of the Texas and Pacific railway to one-half. The other half is subject to settlement. Much of the granted lands are unoccupied, or uncultivated, and may now be purchased for less than government prices. Emigrants may go much further and fare worse than to locate in this valley. Such need but understand that the demand for irrigation requires colonial or united action, and that large communities will do better than small ones. Small farms for the individual are preferable to large ones, unless there be a community of interest, in all the people of a settlement. Much of the land can be doubly cropped each year, so that one acre in the Mesilla valley answers to two in Colorado. Every farm should be cultivated to its full capacity, and all the refuse returned to the. soil. Every acre should wear the image of a garden, and it will give support to a human being. While agents for colonies are running hither and thither seeking locations, they should look to the valley lying in this favored climate, where lands are cheap, on the line of the Texas and Pacific railway, and whose track will reach it before the hardy emigrant can possibly prepare for the advent. Time in this case is most surely money in the pockets of the first comers.

EARLY TIMES.

For centuries past stock-raising has been recognized as *one of the great industries of New Mexico.* When the gold discoveries drew thousands of men to California, New Mexico had the droves of cattle and flocks of sheep to nearly supply the prospectors with meats. But owing to the inroads and pillages of the Indians in southern New Mexico, thousands of cattle, sheep and horses were destroyed, and most persons were deterred from engaging in the business. The flocks and herds could only be kept in proximity to the settlements, whence immediate pursuit could be given whenever the stock was raided upon, and thus some could be saved, but often with large losses. *War has been the normal condition between the Mexican and Indians;* stock was the object sought by the Indian, and defended by the Mexican. These wars and depredations narrowed the limits of the stock districts to the oldest and strongest settlements, which were then near the 35th parallel, and southern New Mexico, though often looked at with anxious eyes, was by reason of the great number of Indians infesting it, given up to them. The dreaded 'Journey of the Dead' separated the Mesilla valley from the settlements above, and on either side lay regions unexplored, yet roamed over by men worse than the Bedouins of Arabia and Egypt, the terror and dread of all, whom to meet was the signal for a deadly fight. Happily the successions of the descendants of Europe have increased faster than the Indians, and their weapons of warfare more effective, till now comparative safety prevails, and the rich pastures of southern New Mexico are open to flocks and herds.

PASTURES EAST OF THE RIO GRANDE.

On the east of the Rio Grande, near the 35th parallel, the range has broken down to a high plateau, with several isolated ranges, one of which, the white mountain, near Fort Stanton, rises to nearly a hight of 8,000 feet above the level of the ocean. This plateau and the mountain sides are covered with fine, rich grasses, on which cattle and sheep become remarkably fat in summer, and which dries to a hay in early autumn, and supplies the herds with winter food.

WATERING PLACES.

These mountain ranges are the source of numerous springs, which form small rivulets, some of which sink after running a short distance; others find their way into the Rio Grande or Pecos, forming mill-streams of more or less magnitude. From these the cattle and sheep may feed to the distance of several miles, returning as often as they require drink. At many places wet grounds exist, where water may be procured in excavations and wells, and can be saved in tanks for large herds of cattle. These will also be utilized, and thus new pastures be added.

CLIMATIC LOCATION.

In the Atlantic is the great whirl which causes the Gulf Stream, and collects the floating trees and seaweeds in the sea of Saragossa. A similar whirl exists in the Pacific ocean. These whirls, with centers about equally distant from southern New Mexico, differently affect our climate. Their foci are oscillated north and south as the sun passes from solstice to solstice. In summer the winds in the Atlantic whirl drives the rain belt over us, and gives to New Mexico its rains, which produce our grasses, while the winds of the Pacific whirl are confined to California, and the rains are pouring over the eastern coast of Asia. In winter the Atlantic whirl is withdrawn, and the Pacific winds, robbed of their moisture by the Sierras and mountains to the northwest, reach us arid and rainless. Thus the dry grasses retain their nutritious properties, till they grow anew.

THE VALLEY OF THE PECOS.

The Pecos, which rises in the high mountains northeast of Santa Fé, flows east and south through a valley of its own, and enters the Rio Grande in Texas. On this stream are many valuable places where fine tracts of land may be irrigated; but the valley is also the center of the best pasture lands in New Mexico, which will in a few years be purchased and held as private property, and then those who do not own their watering grounds must be driven out with their herds. The best portions of this river are in southern New Mexico.

THE STAKED PLAIN.

Has generally been supposed to be a desert region, but the latest explorations demonstrate that *it is an immense grassy plateau, with water found in pools and tanks, wet meadows and small springs, which flow but short distances, and that most of this plain is good pasture land.*

PASTURES WEST OF THE RIO GRANDE.

South of the Gila in New Mexico, there is only a bifurcated range of mountains, Cooke's Peak forming the eastern branch, and the Burro the western, between which flows the Mimbres, a beautiful mill stream, and which will form excellent powers for manufacturing purposes, and irrigate most of the river bottom lands. These ranges also give many small springs, from which large herds can procure water the year through. They rise from a plateau elevated from 4,700 to 6,000 feet above the ocean, and mountains and plains are coated with excellent grasses. Prof. Maury, who traveled over this Territory in 1858, says: 'The sun never shown upon a finer grazing country than upon the three hundred miles west of the Rio Grande. The traveler has before him, throughout the entire distance, a sea of grass, whose nutricious qualities have no equal, and the stock raiser in January sees his cattle in better condition than our eastern farmer his stall fed ox.'

On the 7th of August, 1872, while accompanying the exploring party on the Texas and Pacific railway, when we were passing by Cooke's Peak, and after I had ridden about twenty miles, I made this entry in my journal: 'To-day I have passed most of the time over plains of the *black grama*, one of the most nutritious of the perennial grasses of this region. It is now growing rapidly under the influence of the late rains, and *millions of cattle could be pastured here throughout the year.*' Similar entries are made on other days, and for other places, till we passed into Arizona. In most of these meadows were found pools of good, sweet water, and judging from the surface indications, it appeared evident that water in abundance from common wells could be readily procured.

COUNTLESS HERDS CAN FEED HERE.

The lands which cannot be irrigated produce these rich grasses, on which countless herds of cattle, sheep and horses may pasture the year round, requiring no other feed or shelter than such as they can find in their ranges, and no care but the herdsman to keep them together. These lands are never covered by snows which lie for two days, or that cover the grass from the bite of the stock. The perennial grasses are always green at the bottom, and the tops are hay, as are also the annual grasses which spring up with the summer rains, and fill all the ground not occupied by the perennials.

HEALTH OF STOCK.

The free, pure air of this entire region allows no epidemi disease to arise, or when disease is introduced, to become injuriously epidemic. When the epizooty passed over this region in the spring of 1873, the horses suffered but slightly from its effects. The herds and flocks need not lie on the same ground two nights in succession, and before they require to reoccupy it, all miasmatic exhalations will have disappeared.

PROFITS OF STOCK-RAISING.

Without enlarging on the details of the profits of stock-raising in southern New Mexico, or specifying cases, a few data from which deductions may be made will alone be given. Each cow between two and fifteen years of age may be expected to drop a calf, and the twins will equal the percentage of calves which will die, as none perish from inclemency of weather. Hence each hundred cows will produce and rear one hundred calves, one-half of which will also have a calf at the end of the second year. The steers will more than pay all expenses of herding and marketing, and the heifers are clear gain.

With sheep the increase is still greater. Each ewe of one year will drop a lamb, and the twins will more than equal the deaths of the entire flock for the year. Hence the man who commences the year with one thousand ewes, will at the end of the year have 2,000 sheep, of which 1,500 will be ewes, and 500 wethers of one year, to be sold. At the end of the second year his flock will be 3,000, of which 2,250 will be ewes, and 750 wethers for market, and at the end of the third year he finds himself with a flock of 3,375 ewes and 1,125 wethers for market. Thus after selling 1,875 wethers, he has 3,375 ewes left, as the produce of his 1,000 ewes in three years.

The better the quality of the stock, the greater the income from it. From these data each one can easily calculate the profits."

CONCLUSION.

The territorial archives and records show that a considerable portion of the Territory is covered by numerous large and small grants, made by the Spanish and Mexican governments, long prior to the American occupation of this acquired Territory in the year 1846, which grants are recognized as good and valid against the public domain, under the treaties of 1848 and 1853 with Mexico, and vary in size and extent from 1000 to 500,000 acres and upwards, and were made with a view to embrace agricultural, pastoral, wood and timbered lands, and as one inducement to extend the frontier as far as possible, so as to protect the interior settlements. Minerals of all kinds, such as gold-bearing quartz, copper, iron, silver, lead, etc., including placers, abound as a general thing throughout the hilly and mountainous part of the Territory, and are claimed, go with, and belong to the grants covering them. The foot-hills and lower lands are covered with natural grasses in variety, such as the celebrated blackhead grama, grama chino, buffalo and river-bottom grasses. The first is the most extensive, and is cut and cured in its wild state, making the choicest of hay, and is admitted to be far superior to timothy, furnishing green pasture in summer, and hay in winter. Cattle, horses and sheep live and keep fat upon it the year round, without being sheltered or requiring extra food, the climate being considered as fine as there is on the continent.

In a majority of cases the grant lands are held by the heirs and legal representatives of the original grantees, all natives of the country. For a stranger to judiciously and successfully purchase from them it is necessary to operate through such parties here as have a knowledge of the country, and of the people and their language—the Spanish, and who has made these land grants a study, and understands the land laws and regulations, and the nature and character of the grants. The grant titles are equal, if not superior, to the United States land patents.

Traveling south-west from Santa Fé, the valley of the Rio Grande del Norte is reached in a distance of 25 miles, and is more than 1500 feet lower than Santa Fé, where one comes in contact with a portion of the agricultural lands; extensive vineyards which bear a profuse and delicious grape, large quantities of which are manufactured into an excellent wine. Together with the grape, corn, wheat, oats, etc., are cultivated for a distance of 350 miles or more down the valley of the Rio Grande, at intervals, and wherever there are towns and settlements.

Eastward, northeastward and south is an extensive pastoral country, reaching as it were to the very borders of Texas and Mexico. The Pecos river, which has its source in the mountains within thirty miles of Santa Fé, in a northeasterly direction, winds its way southeasterly, and waters, together with its tributaries, an immense country, pastoral and agricultural, where, as in the Rio Grande valley, the grape is successfully raised on the lower lands, as well as other crops of corn, wheat, etc., with vegetables of every kind and description.

The lower Pecos and Rio Grande valley country will some day, like southern California, boast of their grape-growing and wine-making capacity and facilities. North, northwest and west, the country is more elevated and mountainous, still affording a remarkably fine climate, immense stock-ranges with their natural grasses and shelters, and from which comes much of the fat beef and mutton which supplies Santa Fé and its surroundings. This region, as a general thing is well timbered, well wooded, and well watered. The valleys are not so extensive in width (leaving out the Rio Grande) on this, the Atlantic slope, but are extremely rich and fertile, too elevated for the grape, yet admirably adapted to the potato, and an exceedingly fine article of wheat and barley.

The region known as the Tierra Amarilla, Chama river and its tributaries, the Puerco and Jemez rivers, with their numerous tributaries, are all noted regions for pastoral capacity, and for large numbers of sheep and cattle. Thousands upon thousands of the former winter in many of these localities, and are found to be fat and healthy in the spring of the year, without any food or shelter except what nature provides. The mountains and foot-hills bear ample evidence of fine pine timber, piñon and cedar forests, together with minerals. The elevated or table-lands are covered to a fair extent with piñon and cedar tree groves, which also dot the extensive gently-rolling prairie country for many miles north, south, east and west.

In cultivating the land, irrigation has to be depended upon. In many localities, however, near the base of mountains, fine crops are raised without irrigation, upon lands which are called temporal. On a large portion of the prairie country there is a scarcity of water for irrigating purposes, consequently but little farming is done outside the valleys which contain living streams. This does not, however, go to prove that it will always remain so, for that portion of the country can, and eventually will, be utilized by Artesian boring, wind-mill power, and ordinary wells, as also by building tanks, or throwing up artificial embankments at the base of long slopes, thereby collecting the drainage of many miles in circumference during the rainy season, which usually commences between the 15th and last days of June, raining at intervals, and lasting until August, and sometimes September, after which we usually have from two to four months of most delightful Indian summer-like weather.

During the winter, as a general occurrence, we have occasional rains in the lower, and light snows on the middle altitudes, with heavy snows in the elevated and high mountain ranges, the melting of which feeds the streams up to the time of the fall of rain. In many localities, especially on the rolling prairies and plains, are found natural basins which are susceptible of being made to hold water at a small expense (collected from the rains) for time indefinite. Again there are numerous lakes of water, both fresh and salt, distributed over a large area of country, all of which can be utilized for agricultural and pastoral purposes.

In the building of houses, for city or rancho, the ordinary sun-dried adobe, made of common earth, is used, and costs from $5.00 to $7.50 per 1000—2,500 of which will build a warm 15x20 feet 18 inches thick wall, 10 feet high, put up in mud mortar, and covered with earth, after the fashion of the country.

Colonies of 50 families, and upwards, can find very desirable locations in the shape of land grants, which can still be purchased at from 25 cents to 50 cents per acre. At some points there are large, valuable grants located on and near the line of anticipated railroads, which embrace extensive forests of pine, saw and tie timber, which will eventually, or in a very few years, sell for tenfold the amount paid in the first instance for the entire grant and possessions.

True, we have at this date what would seem free and extensive grazing regions; so it was in California twenty years since; but what is there to-day? The common pasture lands of that day in California, worth then 10 to 25 cents per acre, and thought to be high at that price, and unfit for any other purpose but grazing, now *rent* at that price per acre, year after year, for pastoral purposes alone, and are to-day worth from $5.00 to $50.00 per acre in many instances, and are in many localities in a high state of cultivation by the simple process of fallow plowing. *What California was twenty years ago, New Mexico is to-day*, and those who now secure theirland grant, large or small, and stock it with sheep and cattle, or even let it remain unstocked a few years, will realize their every hope, and live in ease and comfort and luxury in after years from their present investments.

Stock-raising labor is here remarkably cheap. For instance: a native boy who has been reared from infancy as it were, with the sheep and goat herd, will with the assistance of two or three native shepherd dogs, attend a flock of 500 to 2000 sheep, at an expense of $5.00 to $7.00 per month, not including his board, which consists generally of goat milk, and coarse bread and beans.

As to railroads, the prospect is, indeed, most flattering. The Texas Pacific will pass along the line of the 32d parallel, and the Atlantic and Pacific along the line of the 35th, about 18 miles south of Santa Fé, *en route* to the Pacific coast. The Atchison, Topeka and Santa Fé road will pass through southern Colorado into New Mexico, and after reaching the Cimarron will probably ascend that river, and cross over into the Taos valley, crossing the Rio Grande del Norte north of Santa Fé some 70 miles, making a detour northwesterly, after reaching Abiquin, 50 miles from Santa Fé, with a view to tap and pass through the immense agricultural, pastoral, mineral and timbered region of the celebrated San Juan river country, the first waters of which are about 120 miles northwest of Santa Fé, and which belong to the Pacific slope.

As we have at considerable length spoken of the Mesilla valley in extreme southern New Mexico, we will mention now somewhat in extenso extreme northern New Mexico, on the San Juan river. The region of country drained by the San Juan and a large number of tributaries to that stream, we assert, from personal observation, to be as fine as there is on the continent, with a capacity sufficient to give homes to a population equal to that of the whole Territory, embracing, as it does, all that nature could do for scenery, broad and fertile valleys, from one to twenty-five miles wide, with crystal waters in superabundance, stocked with the favorite mountain trout peculiar to that region, with a forest of pine timber, from which can be selected thousands upon thousands of pines that show a stump that will measure 24 to 40 inches and upwards; millions of acres of natural grasses, peculiar to this country and climate, in many places interspersed with large patches of wild oats, stirrup-high, with water-power, from appearances sufficient to run the machinery of the world. This super-extraordinary country, which nature seems to have favored to extremes, is all that is desirable, and which is located immediately south and west of the immensely high mountain range, is claimed and occupied by numerous bands of Ute Indians, of good conduct generally, occupying on an average each about 34 miles square of territory. The cry now arising against the occupation and monopoly of this magnificent country, extending to Grand river, in the territories of Utah and Colorado, and far beyond, by the Ute Indians, will cause, and indeed will force the government to remove them to a proper sized reservation, or the flow of immigration will drive them from this immense country lying contiguous to what are known as the San Juan river mines. The region embracing the mountains and mineral part just ceded by the Utes to the government of upwards of 2,000,000 of acres, as far as prospected, lies in Colorado, and shows masses of mineral gold, silver and copper of fabulous richness and extent, which is now attracting an unusually large immigration.

Hundreds, yes thousands of fortune-seekers are to-day wending their way there, by the different routes leading to this new paradise and mass of wealth, from the eastern states. Their routes are mainly from Denver, Pueblo and Trinidad, in Colorado, *via* the Sangre de Christo, and other passes in that vicinity, to La Loma and Rio Grande city, thence up the Rio Grande del Norte and over the summit, which is 12,000 to 14,000 feet above the ocean, into Baker's and Los Animas Parks; also *via* Conejos, over a small mountain range to Tierra Amarilla, Elbert and Hermosillo, on the south side of the high range just mentioned; also down the San Luis Park and valley of the Rio Grande from La Loma and Conejos; or, as soon as the Sangre de Christo Pass has been traveled, *via* Ojo Caliente, Abiquin and Tierra Amarilla, New Mexico, into the San Juan river country proper, reaching Las Animas river at the new towns of Elbert and Hermosillo, from whence it is but 33 miles to the Little Giant mine, and is accessible the year round, generally, when by Del Norte City and summit they are only accessible for about four or five months in the year. Another and far preferable route which will in time be appreciated and extensively traveled in preference to any other, will be from Pueblo or Trinidad, in Colorado, to Cimarron, *via* Moreno mines, Taos valley and Cieneguilla, in New Mexico, at which named points the government is expending a congressional appropriation of $25,000 in building suitable bridges across the Rio Grande, and grading a military road between Taos and Rio Arriba counties, to Embudo, Plaza

Alcalde, and the pueblo of San Juan, re-crossing the Rio Grande at this point, and proceeding to Abiquin, etc.

In the valley of Taos large quantities of wheat are manufactured into a superior article of flour. Oats, corn and vegetables are also cultivated. Here the emigrant can get his supply of No. 1 flour at about $4.00 per 100 pounds, and at Plaza Alcalde and the pueblo of San Juan any amount of grains, and pass on through a beautiful fertile country, reaching the new towns of Elbert and Hermosillo (at the base and south side of the high range,) laid out on the banks of the Animas river. Here one is struck with the grandeur of the scenery, the immense water power, the beautiful broad valley below, and at once is impressed with the future importance of these localities as proper sites for immense and numberless reduction works, which must very soon send up their dense clouds of black smoke in token of success.

In this vicinity, but a few miles distant, have been discovered and located several very heavy veins of apparently a superior article of coal. Midway between Tierra Amarilla, Elbert and Hermosillo, near one bank of the San Juan river, are the famous Pagosa boiling sulphur springs, now in Colorado (admirably located by nature in a spot especially adapted for the building of a large city,) whose waters will cure all diseases of the human system, throwing out a sufficiency of water for a thousand health-giving baths per hour.

In the matter of railroads, before spoken of, we mention here the Denver and Rio Grande railroad, now within about 300 miles (over the route it is supposed to pass) from Santa Fé, and designed to pass through the San Luis Park country, an elevated valley formation, on the upper Rio Grande, in a northerly direction from Santa Fé, following down the Rio Grande to or near Santa Fé, cutting the line of the proposed Atchison, Topeka and Santa Fé, Atlantic and Pacific, and Texas Pacific railroads, and leaving New Mexico at El Paso, Mexico, a point 350 miles down the valley of the Rio Grande from Santa Fe, and passing into the Mexican republic, through the city of Chihuahua, and on through other cities and states to the city of Mexico.

In conclusion, we desire to say that it has here been our aim to bring into at least partial light the geographical position and character of New Mexico, and the superior natural advantages which she possesses, and which she offers with extended arms open to receive and embrace in welcome all who may choose to cast their lot with ours.

First—For the peculiarly charming climate, free as it is from all and every epidemic, mild, and yet invigorating, and singularly pure and pleasant and salubrious.

Second—For her millions of tons of hidden treasure in the shape of gold, silver, cinnabar, copper, iron, lead, and coal, which lie buried within the bosoms of her majestic mountains, which stand guarded by enormous armies of gigantic pines and other forest kings, and constituting forests of incalculable worth and value, whose heads tower high above the average plain, reaching to the very heavens, as it were.

Third—For her vast pastoral domain, which is unequaled by that of any territory or state in the American Union, and whose sweet nutritious grasses, fanned by the purest air, and moistened by the virgin waters, emanating from the snow-capped ranges, and borne thence with the vaporous floating clouds, and then descending with all their freshening purity. The valley, the plain, and the mountain alike keep the thousands of herds of cattle and sheep in a state of *contentment*, causing them to thrive and be always in marketable condition from season to season, and from year to year, and come to maturity earlier, and be more prolific—all without extra care or extra food.

Fourth—For the immense and valuable water powers coming from her massive mountains and their towering peaks, sufficient to run the machinery of the world, apart from the amounts which will some day be required for extensive wool factories, and numberless quartz mills and stack furnaces, and last, not least, the broad and inviting field of adventure, here open and offered to the capitalist and the enterprising, unequaled anywhere upon the continent, from whose capital or labor greater results in actual profits will accrue, with less risk and care than are obtained in the general, ordinary routine of successful business in the commercial cities of the Union—investments which will yield eighty per centum compound interest, and which really only require two months of close attention out of the twelve. In this we refer to the rearing of cattle and sheep, and more particularly the latter, and to the one month at lambing, and the one month at shearing time.

Fifth—For her lands in large bodies, whose titles, under grants from the former governments of the country, are equal to the United States land patents, and which can now be purchased at mere nominal prices, as it were, but which must in a very few years command fabulous prices for pastoral purposes alone. If we examine the industrial history of California for the past quarter century, we have an illustrative idea of what New Mexico will be a few years hence.

We repeat, no Territory or State offers such inducements as New Mexico; for the investment—*the safe and profitable investment*—of capital, though its amount be millions of dollars, chiefly in landed estates.

If we have failed to bring to light and attention at least a few of the many advantages our Territory possesses and offers, in the foregoing pages, it has been the fault of the head and not of the heart. And here we leave the subject, to be renewed at an early day, we trust, by a more able, but not less impartial pen than ours.

A WORD SPECIAL.

Inasmuch as in New Mexico we have not as yet the means of general and facile conveyance off the principal thoroughfares, and travel conveyance may not always be readily procured for examining particular parts of the country, we suggest to parties coming into the Territory with a view of seeing and investing in it, that they procure at the terminus of the railroads a light wagon and a pair of animals, to better facilitate their movements in examining such parts of the country as they may desire to see, after which, sale can always be made of the outfit, such being exceedingly scarce. It is with great difficulty that a team and wagon can be procured here at from $5 to $6 per day, if at all.

Distance from terminus of railroads to Santa Fé, about three hundred miles; coach fare, twenty cents per mile; meals, one dollar each, extra. Coaches leave and arrive daily from terminus of railroads; also a weekly coach from Santa Fé to El Paso and Silver City—fare same as eastern line, with a daily mail—balance of week days mail goes daily on "buckboard."

On other routes the mails are weekly and semi-weekly, carried generally on horseback.

NEW MEXICO.

After the manuscript of this work had been placed in the hands of the printer, and the matter put in type, the following from the Washington correspondent of the *Alta California*, C. A. Wetmore, and published in its issue of June 5, 1874, came to our notice, and it is inserted here as containing additional intellegence from an undeniable source, and we believe will be read with interest by parties desiring further information of the Territory of New Mexico !

[*From the Special Correspondent of the* "ALTA," *at Washington.*

Washington, May 25, 1874.—New Mexico is half way into the Union at present writing. She is a territory in chrysolis, about to emerge into the panopolies of one of the great sisterhood of States. The House having passed, by a large majority, the bill providing for the admission of the Territory of New Mexico into the Union, the Senate can hardly do less. Still, it is feared the Senate may prove hostile, or at least refuse to act on the bill this session. There are no tenable objections against the admission of New Mexico. In population and in resources she compares favorably with the new States which have preceded her, and under a State Government her population is certain to increase rapidly, while her resources will be more fully developed.

Mr. Elkins, the Delegate from New Mexico, in his very able speech on the admission of that Territory—a maiden effort, by the way, and one which had the undivided attention of the House—asked for the admission of New Mexico as a State into the Union on the following grounds and for the following reasons:

First—Because she is entitled to such admission as a matter of right, having the requisite population prescribed by law, and the capacity to support a State Government.

Second—She is entitled to admission into the Union by reason of the promises and assurances made by our Government to her people previous to the ratification of the Treaty of Guadaloupe Hidalgo, by which she was ceded to the United States, as also by the terms and stipulations of the treaty itself.

POPULATION.

Could a correct census have been taken in 1870, Mr. Elkins believes it would have shown a population of about 110,000, not including the Pueblo Indians, recently decided by the Supreme Court of New Mexico to be citizens of the United States. Taking, however, the census of 1870, and considering the 23,000 given to Arizona and Colorado Territories, it will show the increase in the population of New Mexico to have been about 35 per cent., notwithstanding during most all of this period the Territory was cursed by sanguinary Indian wars, her people killed and her property stolen, her mining, stock-raising and other industrial enterprises paralyzed, and the nearest railway a thousand miles from her border.

The average increase of twenty or more of the older States during that time was only about 20 per cent., and the actual increase proper of New Mexico has been about 10 per cent. greater in the last ten years than that of Alabama, Connecticut, Georgia, Arkansas, Delaware, Indiana, Kentucky, Louisiana, Maine, Massachusetts, Mississippi, New Hampshire, New York, North Carolina, South Carolina, Ohio, Pennsylvania, Rhode Island and Tennessee.

The present population is estimated to be about 135,000. The southern, northern and eastern portions of the Territory are rapidly settling, and have been since 1870, with a very substantial class of inhabitants, devoted as they are for the most part to stock-raising and farming. This increased impetus given to immigration to the portion of the Territory just named, is owing to the fact that for the last three years New Mexico has been free from Indian hostilities, for which reason also, since 1870, in those portions large mining districts have been opened and occupied.

Fifteen States have been admitted into the Union with a less population than New Mexico had, even in 1870 (this was a stumper for the opponents of the bill), and, it is asked, "if fifteen of the twenty States admitted since the original thirteen have been so admitted, on an average population of less than 63,000, shall New Mexico, with an admitted population of 60,000 or 70,000 in excess of this average, be allowed this long denied right?" The ratio of representation entitling a State to admission into the Union has been as follows: at first it was 30,000; in 1793 it was 33,000; in 1813 it was 35,000; in 1823 it was 40,000; in 1833 it was 47,700; in 1843 it was 70,680; in 1856 it was 93,420. No less than four States—Florida, Oregon, Nevada and Nebraska—have been admitted without the required ratio, New Mexico having more population than either of these States at the date of their admission.

NEW MEXICO SOUND, FINANCIALLY.

The ability of New Mexico to support a State Government is not doubted by those acquainted with her condition and resources. She will start on her new career with virtually no debt, the sum being now only about $75,000, with a sure prospect of being liquidated in a year or two at furthest. Not a county in the Territory has created a debt for any purpose. The warrants in most of the counties are worth one hundred cents on the dollar. The people favor the cash system. They are wisely conservative in all monetary affairs, and are adverse to creating either a territorial or county debt, and their conservatism has been greatly strengthened by the fact that they see in other portions of the country the inhabitants are groaning beneath town, city, county and State debt, often recklessly increased. New Mexico being an old country, her improvements and wealth are substantial, the result of two centuries. Her people have been censured for want of enterprise and public spirit, but now that they owe comparatively nothing, and there is no necessity for any increased taxation, the Territory becomes peculiarly inviting to those seeking homes. While New Mexico is little known throughout the country generally, her merchants have been long and most favorably known to the commercial world in the cities of New York, Philadelphia, Baltimore, Chicago and St. Louis.

RESOURCES.

The resources of New Mexico are not surpassed by those of any state or territory in the Union. She has always produced and always will produce enough to support her population. For the last ten years she has done this, and with the surplus supplied the army and the Indians now on reservations in the Territory. Her beautiful and fertile valleys yield an abundant return to the farmer for his labor, and as a wheat producing country she is certainly surpassed by none and equaled by but few of the States and Territories.

Her boundless plains and plateaus, covered with the most nutritious grasses known, make her take rank preëminently as a stock-growing region. This branch of industry is now encouraged by accession to her stock-growers from all parts of the country. The receipts for wool and hides shipped to St. Louis, Philadelphia and New York, amounts annually to about $2,000,000, and the cattle sent to the eastern markets, together with beef supplied to the Indians and the army, amount to near $2,000,000.

The Territory abounds in minerals of all kinds, principally coal, iron, lead, copper, silver and gold, and in inexhaustible quantities, but little developed and worked for want of machinery and railway connections. It is estimated that the mines yield annually of gold, silver and copper, about $2,000,000. The observations of all scientists and travelers who have visited the Territory confirm in the amplest manner her claims to immense coal-fields and iron deposits, rivaled only by those of Pennsylvania, and being almost equal to hers in extent and quality.

FUTURE COAL TRADE.

It is estimated by one of the best authorities in the whole country that in the completion of either the Atchison, Topeka and Santa Fé, or the Kansas Pacific Railway to Cimarron, New Mexico, there will grow up in a short time a coal trade of three thousand tons per day to supply six hundred miles of country, reaching from the base of the Rocky Mountains down the Valley of the Arkansas River far into the neighboring State of Kansas. This coal must be supplied from New Mexico; it can come from no other quarter; and this will be only the beginning of the coal trade, not to speak of the copper, lead, iron, and precious ores that will be shipped for reduction.

MANUFACTURING ELEMENTS.

New Mexico must become a manufacturing country. She has all the elements necessary to this end. Unskilled labor and the necessaries of life are cheaper in New Mexico than in the Atlantic states and in the Mississippi valley, and when it is considered that New Mexico has in the greatest abundance coal, iron, lead, copper and silver, also wool and hides, the time is certainly not far distant when she will have manufactures of all kinds, and instead of paying high freight for cloths, carpets, shoes, machinery, farming utensils and railroad iron, she will not only from her own manufactures supply the wants of her people, but compete with the manufactories of the east in supplying less favored sections.

RAILWAYS.

Five lines of railway are under construction, and pointing to New Mexico—the Texas and Pacific, Atlantic and Pacific, Atchison, Topeka and Santa Fé, Kansas Pacific, and Denver and Rio Grande; three are within ninety miles of her borders, with a fair prospect of being rapidly extended, and three will terminate within the heart of New Mexico, and two it is supposed will become transcontinental.

EDUCATION.

Although education has been much neglected in New Mexico, I have pleasure in stating that the people have become aroused to its transcendent importance, and in 1871 the Legislature passed an Act establishing a common-school system throughout the Territory, and provided for the support thereof that there should be set apart not only the poll tax and one-fourth of all other taxes, but a certain surplus in the various county treasuries. This Act has been in operation about three years, and according to the report of the Secretary of the Territory there are now established and in full operation, one hundred and thirty-three public schools. From this it will be seen that New Mexico appropriates a larger share of her taxes for the support of her public schools than any other State or Territory in the Union, and as yet she has had no help from any source whatever for school purposes. In addition to the public schools there are a number of colleges and high schools in the Territory.

WHY TERRITORIES SEEK TO BECOME STATES.

It is often asked why Territories seek so zealously to become States. To those who have lived in Territories no answer to this interrogatory is needed, but to those who have not enjoyed this experience, I desire to say that the interests of a Territory to the General Government are necessarily secondary. The Territories have no vote and no power, and are therefore not heard. The long arm of the Government cannot reach the distant and remote sections and jealously guard the rights of the people, anticipate their wants and build up their interests. In trying to do so the Government is attempting too much, and what was never contemplated. The Territories want local self-government, because they can better build up their own interests and insure their own prosperity as States. The history of the whole country attests that States flourish and increase more rapidly than Territories. The following table will show these facts:

Tennessee admitted in 1796; population in 1790, 35,791; in 1800, 105,602.

Ohio admitted in 1802; population in 1800, 45,365; in 1810, 230,760.

Louisiana admitted in 1812; population in 1810, 76,556; in 1820, 153,407.

Indiana admitted in 1816; population in 1810, 24,520; in 1820, 147,178.

Mississippi admitted in 1817; population in 1810, 40,322; in 1820, 75,448.

Illinois admitted in 1818; population in 1810, 12,282; in 1820, 55,200.

Missouri admitted in 1821; population in 1820, 66,586; in 1830, 140,455.

Arkansas admitted in 1836; population in 1830, 43,388; in 1840, 97,674.

Michigan admitted in 1837; population in 1830, 31,639; in 1840, 212,267.

Florida admitted in 1845; population in 1840, 54,477; in 1850, 87,445.

Wisconsin admitted in 1848; population in 1840, 30,495; in 1850, 305,391.

Iowa admitted in 1848; population in 1840, 43,112; in 1850, 192,214.

California admitted in 1850; population in 1850, 92,597.

Minnesota admitted in 1858; population in 1850, 6,077; in 1860, 173,855.

Oregon admitted in 1859; population in 1850, 13,294; in 1860, 52,465.

Nevada admitted in 1864; population in 1860, 6,857; in 1870, 42,491.

Nebraska admitted in 1867; population in 1860, 28,841; in 1870, 122,993.

THE EASTERN IDEA OF A TERRITORY.

The idea of a Territory to the people of the east suggests want of law, want of protection to property and life, want of society; indeed, the word is a synonym for disorder and lawlessness, for which reason emigration and capital find their way so slowly into the territories; but, on the contrary, a state carries with it the idea of law, order, strength and dignity, and has invariably attracted immigration and promoted prosperity.

But, in addition to all this, the keeping and holding large bodies of people in remote localities in territorial bondage and subjection; governing them by laws they have no part in enacting; taxing them without representation; denying them the right to elect their own officers; appointing to the highest places among them entire strangers, who have no interest in the country, who sometimes prove to be mere political adventurers, is not only unjust and unrepublican, but hostile to our ideas of true government.

It is often said you have a legislature and a delegate in congress. This is worse than no answer. The first is a farce, a political hybrid, without sovereignty; the second only a beggar at the doors of the executive and congress, without power. Then, to escape from this vassalage, subserviency and injustice, where there is no growth, no encouragement, but where everything is dwarfed and limited, we ask to be admitted as a State.

AN ELOQUENT APPEAL.

New Mexico has been in her pupilage about twenty-six years. She has had her delegates during that period on this floor, who, like other delegates, in season and out of season, have implored and importuned the general government for attention to the wants of the people, showing that their necessities were great; but for the most part Congress, I learn, has been deaf to their entreaties.

By applying for admission, New Mexico testifies her willingness to relieve you of the expense of continuing in existence a territorial government, and enables you to reduce your annual appropriations at a time when economy and retrenchment is the popular demand. She has shown herself amply able to support a State government and keep her credit; and above and beyond all, she has shown her devotion to our institutions, and her fitness to become a member of the Union, by giving up the lives of some of her noblest sons to maintain the one and preserve the other.

THE MEXICAN POPULATION.

One reason argued against the admission of New Mexico has been her large Mexican population. Of this class Mr. Elkins said: Unlike many of our own people, more fortunate, who had been born and educated under our flag, the Mexican population did not hesitate, did not doubt, but saw their duty clear; and when the proclamation of the President of the United States came, calling for troops for help; and when the cause of the Union looked dark and doubtful, and when General Sibley's trained soldiers from the Confederate armies were already on the soil, these people as one man rallied under their adopted flag, and fought gallantly to preserve the Union into which they now seek admission. How well they did their duty let the graves at Fort Craig and Peralta, on the banks of their own loved Rio Grande, and at Apache Canon, testify. They loved the Union well enough to fight for it, and the Union ought to love them enough to adopt them as her sons in truth and in fact.

But apart from all these considerations, which it would seem were of themselves overwhelmingly sufficient to induce Congress to at once provide for the admission of New Mexico into the Union, I claim her right to admission on still higher grounds and for stronger reasons, which cannot, certainly ought not, to be disregarded by Congress. I claim it by virtue of the stipulations of the treaty of Guadaloupe Hidalgo, and the promises and assurances of our government previous to the ratification of the same.

Of this treaty Mr. Elkins gave a full and interesting history. He then treated of the history of New Mexico, of its salubrious and bracing climate, its agricultural, pastoral and mineral resources, its capacity as a wine producing country, and concluded with these eloquent and prophetic words:

"The Rocky mountains not only maintain a peculiar relation to the great plains that lie between her base on the Missouri river, so ably set forth by Professor Wilbur, but with the whole country. The Mississippi valley and the Pacific coast are no longer divided by an inseparable barrier; they have shaken hands across the backbone of the continent, and become wedded in a common interest, the ceremony having been performed in the presence of the majestic and snow clad peaks of the Sierra Nevadas, who stood as the grand and silent witnesses to this happy union, which has been recently more closely strengthened by bands of iron.

The Rocky mountains rest on vast coal beds. Here, in the not very far future, we must go for coal, the great desideratum of our civilization, the basis of almost all power and nearly of all wealth, without which the world would suddenly stop, but with which it will move on to new and astonishing conquests in science, art, mechanics and manufactures.

By an unnatural usurpation cotton was once called and believed by some to be king; but time and the natural laws of commerce have served to dispel this delusion, and coal, with his ebon brow, has come to the front, and by unanimous consent been crowned king forever; and from his dark throne, with his brother iron, wields the scepter of empire over all human industries, his realms being measured only by man's ingenuity.

In the United States the home and throne of this king is in the Rocky mountains; his children live and rule in the Alleghanies and the Mississippi valley. The Rocky mountains will play no ordinary or secondary part in the future of this country. So long unknown, light is beginning to dawn; we are but catching glimpses of the future grandeur and glory of this great empire.

In New Mexico the time is not far distant when a thousand furnaces for the reduction of ores will light up the sides of her vast mountains, and this ore, drawn by a thousand engines busy by day and night, will be poured into the lap of the Mississippi valley; and millions of sheep, cattle and horses will feed on her boundless plateaus." C. A. W.

ERRATA.

Page 59—Second line from bottom of page: read "a population of 4,500," instead of "2,500."

Page 60—Sixth line from top of page: read "*heretofore has been*," instead of, "*is kept* in a state of constant alarm."

THE END.

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